CHAPTER 6

THE COLLEGE ENVIRONMENT REVISITED: A REVIEW OF RESEARCH AND THEORY

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Researchers' interest in the important, but extremely complex and slippery topic of the college environment has waxed and waned over the last 30 years. Beginning with Pace and Stern's (1958) development of the College Characteristics Index to measure perceptions of environmental press, a great variety of approaches and instruments were developed to assess the psychological climates of colleges (Baird and Hartnett, 1980). The availability of these instruments, joined with an increased interest in college student development, led to a great deal of research on the perceptions of the environment by different groups and the effects of different environments in the 1960s and early 1970s (Feldman and Newcomb, 1969; Pascarella, 1985). From the mid-1970s to recent years, the focus seems to have turned to relatively specific aspects of the environment or of subgroups, perhaps because these aspects are more subject to intervention and manipulation, and because they may impinge more directly on students' lives than the global environment (Baird and Hartnett, 1980; Moos, 1979). Although the listings in *Higher Education Abstracts* suggest that researchers' interest in the college environment has remained at about the same level in recent years, it has not regained its popularity of the 1960s.

However, several recent developments have renewed interest in the college environment. First is the call for increased quality in the undergraduate *experience* (e.g., Boyer, 1986), which entails the environment. For example, the recommendations of several national reports recommend changes in the *process* of education as the pathway to excellence (e.g., Study Group on the Conditions of Excellence in American Higher Education, 1984). Second is the interest of researchers in finding better theoretical concepts to explain the ways in which the colleges affect students, as reflected in the development of models of student-environment interaction to account for student attrition (e.g., Pascarella and Terenzini, 1983; Tinto, 1987). These models use concepts which refer, at least partly, to the faculty and peer environments of colleges. A third is the "ecological" approach to guidance and counseling that has emerged in the last few years, which attempts to analyze information about students and their environments and to identify matches and mismatches for the purposes of intervention (e.g., Huebner, 1980).

The purpose of this chapter is to examine the various conceptions of the college environment and to suggest appropriate assessment strategies. In so doing, I will discuss the history of problems in conceptualizing and assessing the environment, evidence from studies of college impact on students, criteria for theories, the issues of the level of analysis, and the validity of different kinds of

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measures. Finally, potentially useful conceptions from research into organizational behavior will be discussed.

A History of Approaches to the College Environment

Approaches to studying the college environment can be categorized as demographic, perceptual, behavioral, and multimethod approaches (Menne, 1967; Feldman, 1972; Huebner, 1980). Demographic methods are primarily descriptive and are based on data of record such as enrollment, distribution of majors, and library books per student. The perceptual approach relies on students', faculty's, and administrators' responses to items and scales designed to assess their perceptions of their institutions. The behavioral approach attempts to assess the environment by measuring detailed observable behavioral regularities of students, faculty, and staff. The multimethod approach combines the other three into a single assessment. Probably the best way to understand these approaches is to examine them in their context in the history of research on college students and their institutions. In general, this history seems to have followed two main streams: one stream focused on understanding and assessing the environment per se, or environmental description, and a second stream assessed the environment as a part of research that focused on other concerns, such as the development of talent, the course of vocational choices, or attrition. Eventually these streams merged.

The First Stream: Environmental Description

The approaches that developed in this stream are mainly organized around specific instruments which are the operational definitions of various approaches to the environment. For this reason, this section of the chapter will describe these measures in some detail. Although there were many implicit theoretical approaches to the college environment, with attendant assessment procedures, reviewed by Barton (1960), the first formal proposal for measuring the college environment lies in the work of Pace and Stern (1958). During the 1950s at Syracuse University, Pace and Stern began to work with the idea that a student's behavior depends not only on personality but also on the demands of the college and the interaction between the student's personality and the college. For example, a rigid student may do well in a formal, structured college but poorly in an informal, unstructured one. Specifically, Pace and Stern attempted to implement the ideas of Harvard psychologist Henry Murray about the personality "needs" of an individual and the "presses" of the environment that influence the individual's behavior. *Needs* are manifested by a tendency to perform actions of a certain kind; for example, a "need for achievement" might be manifested by working hard for grades. A *press* is a property or attribute of an environment which encourages or discourages the individual to behave in particular ways (Stern, 1970).

Presses are of two types, first as they exist in reality or an objective inquiry discloses them to be (alpha press), and second as they are perceived or interpreted by the individual (beta press). The beta press is further composed of a *private press* based on the unique and personal view each person holds about his or her experience and a *consensual press*, which is the common or mutual interpretation of experiences shared by people participating in events. For example, a course in calculus could be judged as relatively difficult or easy by an external expert in mathematics who also had some information about the prior mathematics training and performance of the students. This would be the alpha press. An individual student could feel that the work was easy or difficult (private beta press) but could sense the class's collective view of its difficulty (consensual or aggregated beta press). Thus, an individual's perception of the environment is based partly on his or her own interpretation of experience and partly on the interpretations of important reference groups.

It is this perceived environment that Pace and Stern attempted to assess with the College Characteristics Index (CCI), designed to parallel the measure of needs tapped in the Activities Index (AI). Although Murray's theories did not require that needs and presses be conceived of as parallel, for the purpose of exploring the potential value of the CCI Pace and Stern included scales to parallel those of the AI. The scales were derived from Murray's list of "needs" (1938) and included such variables as affiliation, autonomy, order, and understanding. In other words, the 30 scales of the CCI were part

of a strategy to find environmental presses that bore directly on the satisfaction or frustration of a psychological need. In some cases, this strategy had face validity; for example, the AI need-for-change scale was paralleled by the CCI change-press scale, which included items on whether course and procedures were frequently revised and whether the student body was diverse in background, opinions, and behavior. Other scales seemed to be stretching to find environmental parallels of needs. For example, "harm avoidance" included items on fire drills, health campaigns, housing requirements, and the absence of such "rough" activities as intramural sports. The parallelism, not intended by Murray in any case, seems strained and even misleading as a guide to the environment. In any case, the approach seemed to focus on the individual's perceptions of the environment. Stern (1970) subsequently argued that these individual perceptions of the environment from the CCI could be aggregated and averaged to yield a portrait of the collective environment.

Empirical studies showed that the CCI did indeed differentiate among colleges; for example, the profiles for Bennington and Syracuse differed. However, the original hope that the parallelism would reveal a person-environment "fit" which would affect academic performance and student satisfaction was not realized. Although one would expect, for example, students with needs for affiliation to get better grades and to be more satisfied in colleges with high average scores on the CCI affiliation scale, most studies showed no effect of congruence on satisfaction or achievement and have shown negative effects as often as positive effects (see Walsh, 1973, and Huebner, 1980, for summaries of evidence). Further, little has been written to show how the CCI could be used to improve the student-college fit, even if it were shown to make a difference, and less has been written on how CCI results could be specifically used to improve "congruence" on campuses.

These negative results are partly due to the multiple scales on the CCI (i.e., there are 30 possible "fit" scores), and to the fact that the psychometric strategy used to develop the CCI was to examine the variance between individuals, rather than the differences among colleges. That is, differences in CCI scores were based on differences in how different students saw colleges, some portion of which were due to their personalities, attitudes, and so on, and on another indeterminant portion which was due to differences among the colleges they were attending. This was because Stern used the student as the unit of analysis rather than the college. These limitations led Pace (1969), who had moved to UCLA at this time, to use a different strategy. Pace abandoned the press-need parallelism, used the average scores of colleges as the unit of analysis, and selected items that seemed directly relevant to the college experience. Pace used the statistical techniques of cluster analysis and factor analysis and used the college as the unit of analysis to reduce the number of scales to reflect only the major ways *colleges* differed from one another. Finally, for the final selection of items, Pace used a scoring system that was designed to reflect "consensus." An item is counted toward a score in a scale only if two thirds of the respondents agree (or disagree) in the scored direction. For example, if 69% agreed that "students are encouraged to take an active part in social reforms or political programs," it would count for one point for a college on the awareness scale; if only 62 % agreed, it would not count.

The outcome of Pace's analyses was the College and University Environment Scales (CUES). CUES originally consisted of 150 items drawn from the CCI and provided 30-item scales on five dimensions: pragmatism, reflecting the college's emphasis on practicality, status, and college fun; community, reflecting the friendliness and warmth of the campus; awareness, reflecting an active cultural and intellectual life; propriety, reflecting properness and conventionality; and scholarship, reflecting the academic rigor of the college. Eventually, CUES also included a 22-item scale of campus morale, and an 11-item scale of quality of teaching (faculty-student relationships). Pace (1969) related these scales to a variety of other information about colleges to establish their validity. For example, among colleges with high scholarship scores, a greater proportion of the faculty held doctorates. Small colleges were more likely than large colleges to have high community scores.

In a subsequent study with CUES, Pace (1974) compared the activities of upperclassmen and alumni of 100 institutions. Pace found that these eight types of institutions, selected to reflect the diversity of American higher education, had quite different patterns of CUES scores. For example, selective universities, engineering

schools, and selective liberal arts colleges had similar high scores on the scholarship dimension, but engineering schools had very low awareness scores, while the other two had very high scores; less selective liberal arts colleges had community scores as high as selective liberal arts colleges but had lower scholarship and awareness scores. The other types of colleges—general comprehensive universities, strongly denominational colleges, and teacher's colleges—also showed distinctive patterns on CUES.

However, the most important results of Pace's study for questions of validity were the correlations between CUES scores and the activities and attitudes of students and alumni. For example, the art-activity scale measured whether students and alumni read about art, talk about it, went to galleries and museums to see it, bought it, and expressed themselves through it. The art-activity scale correlated .67 among upperclassmen and .62 among alumni with their college's score on the CUES awareness scale. A college scoring high on this scale would have "an environment that encourages concern about social and political problems, individuality and expressiveness through the arts, and tolerance of criticism" (Pace, 1974). Although one would expect people who experience an environment that encourages expressiveness through the arts to be active in art, colleges that score high on the CUES awareness scale are seldom art schools; usually they are private liberal arts colleges, many of which do not consider themselves to place an extraordinary emphasis on art education. And they are not necessarily highly selective, so the high scores on art activity received by these schools' upperclassmen and alumni cannot be explained simply by the caliber of students that the college attracts. Thus, the art activity of these students and alumni may be a result of the lively intellectual atmospheres of their colleges.

This study also found many other relationships between CUES scores and student and alumni sense of educational progress on a variety of areas, such as writing, understanding science, and critical thinking. In general, students or alumni reported stronger evaluations of their progress in colleges with high CUES scores in areas related to the area of progress. Although not nearly as strong as evidence from studies of student change, these self-reports of amount of progress suggest that the aspects of the environment measured by CUES may be related to the impact of colleges; at least, they are related to satisfaction.

CUES has also been used to compare the perceptions of different campus subgroups, with results indicating that most groups perceive the overall environment in approximately the same way (e.g., Berdie, 1967), although administrators often have a much more positive view of their colleges than do students (Pascarella, 1974). Pace (1972) also showed that the CUES scores of 80 protestant colleges were related to the strength of their legal ties to their denominations: "The more firmly and zealously a college is related to a church the more clearly it emerges as a distinctive college environment. And this distinctiveness is defined by uniformly high scores on the characteristics labeled community, propriety, and practicality" (p. 37).

CUES was also used in a great many studies that compared the scores of incoming freshmen with those of upperclassmen (Feldman and Newcomb, 1969, reviewed many of these studies). In general, incoming freshmen seemed to share a general idealized image of college as friendly, stimulating, and vigorous, regardless of the description provided by students who had actually experienced the environment. Stern (1970) called this the "freshman myth." Some studies suggested that students quickly formed a less idealistic view of their college, sometimes within a few weeks. However, there is little evidence that this "disillusion" has any long-lasting effects.

CUES has also been used by other researchers to examine other topics. For example, Chickering, McDowell, and Campagna (1969) studied institutional differences and student development. Although, like other researchers, they found little relationship between environmental scores and changes in personality, measured in this study by the Omnibus Personality Inventory, they did find relationships with college "orientations." Specifically, students in colleges with high practicality scores tended to shift out of the "nonconformist" orientation, and students in colleges with high community or scholarship scales tended to shift away from the vocational orientation, intellectual students moved into academic orientations, and practical students shifted into vocational and collegiate orientations. All of this suggests some interactions between student characteristics and college environments. Unfortu-

nately, there are very few other studies examining the influence of the variables measured by CUES and change in students. Thus, the main evidence for the influence of the environment as measured by CUES is correlational.

The development of CUES suggests several issues that apply to all measures of the environment and that will be considered again in the concluding section of the chapter. These problems include finding an appropriate theoretical scheme to conceptualize the environment, generalizing from *individual* perceptions or characteristics to a group or total environment, finding conceptually and statistically sound units of analysis and methods of scoring, and establishing the validity of the environmental measure.

Stern (1970) attempted to deal with one of the limitations of the CCI approach: its large number of *a priori* variables and scales. Stern factor-analyzed the CCI, using individual students' responses as the unit of analysis. Technically, this meant he had analyzed the variance between students' perceptions of colleges in general, rather than the variance between colleges per se. The dimensions identified are therefore the dimensions of how different students view their colleges, as well as the dimensions of how colleges differ from one another as reflected in the perceptions of their students. Stern has reported second-order factor analyses of the CCI and has developed versions for use in high schools, evening colleges, and organizations. Stern has also attempted to describe the "culture" of colleges by factor-analyzing the Activities Index and the CCI together, and then describing colleges in joint terms of the characteristics of their students and the students' perceptions of the environment. This procedure seems to finesse another question about the college environment: Is it due more to the characteristics of the people in the college, or is it due more to the characteristics of the institution independent of its students?

Although Stern (1970) does not provide a satisfactory definition of college "culture" or give a convincing rationale for his analyses, the idea of simultaneously analyzing average individual characteristics and aggregate perceptions of the environment appears to have merit. Stern used institutions as the unit of analysis, and he used average scores on the AI need factors and CCI press factors as variables. The second-order factor analysis recorded five "culture" factors: the expressive, a non-work-oriented, nonconforming climate peopled by students with nonapplied interests, who do not value orderliness; the intellectual, characterized by intellectually demanding courses and faculty, opportunities for expressiveness, little bureaucratic control, peopled by students with high levels of interest in academic achievement and ideas; the protective, characterized by a highly organized, supportive environment and a relatively dependent, submissive student body; the vocational, characterized by heavily applied programs, conventionality, and authoritarianism, with students who tend to be selfish and manipulative; and the collegiate, characterized by extensive facilities for student recreation and amusement, ambiguous standards of achievement, and uncertain administrative practices, with friendly and assertive students.

Stern also proposed three additional indexes: dispersion, deviancy, and dissonance. The dispersion index is the average variation around the college or group mean. For example, a college with a small dispersion index score would presumably have a high degree of consensus on desirable behavior and characteristics; a college with a large dispersion index would have little such consensus. The deviancy index is simply the *individual's* distance from the college mean. The dissonance index is the discrepancy between the need component and the press component of each culture score. This index can be calculated for individuals for assessing intraindividual dissonance or for groups, to assess what Stern calls "cultural dissonance." As intriguing as these indexes are, they, like the "culture" idea, have not been used systematically in subsequent work.

Other Environmental Measures

The interest in the environment *per se* and student characteristics in the mid-1960s led to a variety of additional measures, most of which were developed at the Educational Testing Service. The first of these was the College Student Questionnaire (CSQ; Peterson, 1968), a lengthy survey which was designed to do two things: first, to assess student characteristics that presumably will affect their adjustment to college or could be affected by their college experiences, and second, to assess aspects of the environment that could influence that adjustment or development. Obviously, the questionnaire mixes student and institutional

characteristics. However, one of its chief values has been its utility in studying *changes* in groups on variables that one would hope would be affected by college study. It consists of two parts.

Part I, covering students' backgrounds, attitudes, and plans, was designed to be used with entering students; Part II, which obtains information about students' educational and vocational plans, college activities, and attitudes toward their college, is designed to be used with students who have had one or more years of college. Each questionnaire consists of 200 multiple-choice questions, some of which are fairly complex. Part I can be scored for 7 scales: Family Independence, Peer Independence, Liberalism, Social Conscience, Cultural Sophistication, Motivation for Grades, and Family Social Status. Part II can be scored for 11 scales: the first five described for Part I plus Satisfaction with Faculty, Satisfaction with Administration, Satisfaction with Major, Satisfaction with Students, Study Habits, and Extracurricular Involvement. Although the CSQ was developed atheoretically, there is an *implicit* theory of college impact in these scales; that is, one would hope that as students move through college, they would become independent of their families and independent of peer pressures, would develop greater social consciousness, would become more culturally sophisticated, and, depending on one's political views, would become more liberal in their attitudes. One might also hope that students would be satisfied with their professors, their majors, their peers, and the administrative policies and procedures, which, together, would reflect satisfaction with the environment. That is, again implicitly, the CSQ assumes that the most salient feature of the environment is whether students feel satisfied that it is meeting their educational needs.

Because its format is designed to study change, the CSQ has been used in a wide variety of studies of student groups, particularly residence groups such as those in fraternities and sororities and residence halls (Longino and Kart, 1974). Wilder et al. (1986), for example, studied three cohorts of students at Bucknell, with data gathered when they were freshmen and upperclassmen in the 1960s, the 1970s, and the 1980s. In each time period, "Greek" students tended to score lower than independent or former Greek students on the scales assessing family and peer independence, cultural sophistication, social conscience, and liberalism. The Greeks also gained less on these scales during college. However, the most intriguing finding was that the students of the 1980s *also* scored lower on these measures and gained less. This result belies the belief that today's students start college at a higher level of maturity than students in the past.

The CSQ was also used in a great many studies of the "subcultures" in the Clark and Trow (1966) typology, consisting of the academic, nonconformist, collegiate, and vocational subcultures. Although the CSQ actually measures the "orientation" that a student prefers among those described in four paragraphs, it has, nevertheless, been the operational definition used in studies which find a number of differences among the four groups of students (e.g., Terenzini and Pascarella, 1977; Doucet, 1977).

The next environmental approach measure, the Institutional Functioning Inventory (IFI), was developed in the "environmental description" tradition with a project to assess "institutional vitality," that is, to identify the characteristics of colleges that seemed to have strong, individual atmospheres. This effort changed to one of identifying the major dimensions of how colleges *function* (Peterson et al., 1970). In addition, the authors realized that, in order to understand how colleges function, they would need to assess the perceptions of faculty and administrators, as well as students. The 11 scales in the IFI thus represent the aspects that the authors considered the most important for institutional functioning: Intellectual-Aesthetic Curriculum; Freedom; Human Diversity; Concern for the Improvement of Society; Concern for Undergraduate Learning; Democratic Governance; Meeting Local Needs; Self-Study and Planning; Concern for Advancing Knowledge; Concern for Innovation; and Intellectual Esprit. Although a factor analysis of average faculty scores on these scales suggested that they could be more parsimoniously described by only four factors (liberal atmosphere, sense of community, intellectual climate, and ivory tower outlook), the authors contend that the conceptual distinctions among the scales warrant their retention.

The "validity" of the scales was suggested by correlating them with data of record, CUES scores, and a study of student protest (Sasajima, Davis, and Peterson, 1968). The correlations seemed plausible; for example, library size and research funds were correlated with the

Advancement of Knowledge Scale (.77 and .72, respectively), the Concern for the Improvement of Society Scale correlated with the CUES awareness scale (.68), and the Concern for Undergraduate Learning Scale was negatively correlated with the incidence of student complaints and demonstrations about the quality of teaching. In addition, a multigroup-multiscale analysis showed that faculty, administrators, and students generally described their campuses the same way, with the interesting exception of the Democratic Governance Scale. On this scale, students often perceived much less democracy than did their professors and administrators.

The IFI seems to be sensitive to the actual differences among colleges. For example, although there is a positive correlation between the Institutional Esprit and Democratic Governance scores across all colleges, the profile of one of the armed service academies shows a very high score on Institutional Esprit and a very low score on Democratic Governance; in contrast, a selective liberal arts college renowned for its flexibility had a very high score on Democratic Governance and a very low score on Institutional Esprit.

One of the most extensive studies using the IFI was conducted by Anderson (1983), who compared the "functioning" of a number of colleges, defined by scores on the IFI obtained between 1968 and 1972 and scores obtained between 1979 and 1981, and related these scores to the financial conditions of the colleges. Overall, colleges' scores on the IFI suggested greater human diversity and less democratic governance in the later period. However, state-supported institutions reported gains on all 11 scales, while community colleges declined on 4 scales. Most important, Anderson found little relationship between changes in finances and changes in the IFI. For example, faculty morale was less affected by salaries and institutional finances than by participation in governance. As this study illustrates, the IFI assesses perceptions of components of the environment that are important to faculty, as well as components that are important to students. In that sense, it involves an implicit recognition that there are multiple environments that are based on the experiences of the respondents. For example, faculty would generally have little knowledge of student social life or groups, and students would have little knowledge of the institution's policies on publication and tenure, although these are extremely important to the groups that can report on them. However, it is unlikely that most people who are knowledgeable about college affairs would agree that the IFI adequately describes how colleges actually work, or how their daily activities are carried out.

Another approach to the environment was taken from the literature on organizational theory and behavior. One consistent theme in that literature is that it is critical to understand the *goals* of an organization in order to understand how it functions (e.g., Georgion, 1973). This idea has been applied to universities by sociologists Gross and Grambsch (1968, 1974), who studied the goals of 68 Ph.D.-granting universities as seen by faculty and administrators in two different time periods. The results were basically that the universities in both periods were heavily committed to research and scholarly pursuits, with much less attention given to students and their needs. Peterson and Uhl (1977) adapted the Gross and Grambsch strategy by designing an Institutional Goal Inventory (IGI) so that respondents can rate each of 90 statements of goals both according to how those goals are currently emphasized at the college and according to how they believe the goals should be emphasized. The differences between these "is" and "should be" ratings show how closely present campus goals match the goals that people prefer, and they identify areas where changes may be needed. Furthermore, differences among groups of respondents on their preferred goals show how much agreement exists about institutional purposes and objectives.

The IGI consists of 20 scales. Most of the goal statements form scales that comprise 13 *outcomes*, or substantive objectives, that a college may seek to achieve: Academic Development, Intellectual Orientation, Individual Personal Development, Humanism/Altruism, Cultural/Esthetic Awareness, Traditional Religiousness, Vocational Preparation, Advanced Training, Research, Meeting Local Needs, Public Service, Social Egalitarianism, and Social Criticism/Activism. The remaining statements form 7 scales relating to educational or institutional *process* goals: Freedom, Democratic Governance, Community, Intellectual/Esthetic Environment, Innovation, Off-Campus Learning, and Accountability/Efficiency.

These scales are based on the perceptions of respondents in response to items concerning their institution's goals. For example, in the Academic

Development Scale, respondents report their perceptions of the importance their institution currently gives to such goals as "to help students acquire depth of knowledge in at least one academic discipline" and "to hold students throughout the institution to high standards of intellectual performance."

Although IGI scores correlated with such published institutional data as proportion of faculty with doctorates and sectarian control, the most interesting study was an analysis of the views of faculty, students, administrators, and other members of the institution's community, such as residents and legislators, which showed that different types of institutions differed dramatically on the IGI, reflecting their sharply different missions. In a study of 105 California colleges, Peterson and Uhl (1977) reported that differences were especially large on the scales of Research, (universities high, community colleges low), Vocational Preparation and Social Egalitarianism (community colleges high, private institutions low).

It is striking that for all institutions combined, the "should be" scores were higher than the "is" scores on every scale, suggesting that few institutions are currently meeting their goals, according to their constituencies. The discrepancy was particularly large for the scales of Community, Intellectual Orientation, Individual Personal Development, and Vocational Preparation. In addition, a study comparing the IGI scores of the students, faculty, administrators, chancellors, regents, and residents of local communities of the University of California revealed some large differences *within* the institutions.

As with the IFI, factor analysis revealed a much simpler structure:

> In summary, five factors were identified in the analyses of present importance ratings: (1) humanistic development, which emphasized the personal and ethical development of the student; (2) a liberal, flexible environment characterized by freedom in many activities; (3) service to society; (4) research and graduate training; and (5) academic and intellectual development of students and the associated academic and intellectual climate. With only two minor exceptions, these factors were consistent for each participating group.
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> The results of the analyses of preferred importance ratings are very similar to the analyses of present importance ratings with two exceptions: (1) the academic and intellectual development factor was not isolated as a separate factor; and (2) for the faculty and administrator groups only, an ivory-tower factor was identified, which included Factor 3 (service to society) at one pole and Factor 4 (research and graduate training) at the other pole. (Peterson and Uhl, 1977, p. 55)

Although an analysis of institutional goals is commonly considered critical in order to understand a college's policies and procedures, most goals are specifically tied to the history, the clientele, and the particular programs of the colleges. Therefore, it may not appear to be especially fruitful to many observers to examine *general* goals as the approach of the IGI does (Lunneborg, 1978). A better strategy would be a consideration of *detailed* goals. However, for research purposes, this general approach may allow for comparisons among institutions that would not be possible in the clutter of particular institutions' goals.

Despite its "goal" rationale, it should be obvious that the IGI, at least in the "is" section, is basically a perceptual measure, and thus, it is not surprising that the factors found in the factor analysis are fairly similar to those found in analyses of other perceptual measures. And these factors tend to reflect the general ways in which perceptions of colleges differ from one another, which do not necessarily correspond to other information about colleges or the people in them.

A Shift in Environmental Assessment Research

The possible limitations of the perceptual approach led to two strategies: the first was to use multiple sources of information about colleges, and the second was to make environmental assessments more specific and practical. The first strategy was used by Centra (1970, 1973) in the development of the Questionnaire on Student and College Characteristics (QSCC) to describe the college environment accurately by including information on students' perceptions of their institutions, their behavior during college, and their personal backgrounds and characteristics. After an initial tryout in 8 colleges, Centra (1970) obtained data from a sample of students in 214 colleges, which were subjected to a

variety of factor analyses. First, the 77 items that asked for students' perceptions were analyzed separately. (These items asked students either to indicate whether statements were true or false or to rate their agreement with statements on a 4-point scale.) A typical item was "Faculty members tend to be aloof and somewhat formal with students." The factors obtained were termed Restrictiveness, Faculty-Student Interaction, Activism, Nonacademic Emphasis, Curriculum Flexibility, Challenge (academic), Laboratory Facilities, and Cultural Facilities. From these analyses, factor scores based on two to nine items per factor were computed. The median coefficient alpha reliabilities of the scales were .86, and six of the eight scales had reliabilities of .84 or higher.

In a second analysis, the eight factor scores just described were included with 34 student self-report items about their behavior in college (for example, the extent of their involvement in intramural athletics or dramatic productions), plus objective information about the colleges (such as the percentage of students in residence halls, the number of books in the library per student, and student SAT scores). A factor analysis yielded six factors: athletic emphasis versus cultural activities, size and cliquishness, academic elitism, activism and flexibility, students' satisfaction with their college, and social life. A second, multimethod factor analysis yielded 10 factors. The first 4 were similar to those obtained in the standard factor analysis, supporting the meaning and stability of those factors. The remaining 6 factors were regulation, fraternity and sorority emphasis, emphasis on science, and three other factors with unclear meanings. The variety of these factor solutions suggests the dependence of the description of the environment on the methods used in analysis.

In an interesting precursor to the student consumerism movement, the colleges that had participated in the administration of the QSCC had been encouraged to use the results in their self-descriptions for the "College Life" section of the College Board's *College Handbook*. Interestingly, 53% did not use the results at all, 9% used them for only one to three sentences, 13% used them for as much as a short paragraph, and only 25% used them extensively.

However, the key finding, again, is that the dimensions of the environment that are found are considerably dependent on the methods used to assess them. The point was also made by Chickering (1972), who found that "Colleges which are bedfellows on CUES, where students give their general impressions, may not even be roommates on an instrument like the ECQ [Experience of College Questionnaire], where they report their daily experiences and behaviors, although they may remain in the same dormitory. Conversely, strangers on one instrument may find themselves friends or acquaintances on another" (p. 141). This point will be discussed in greater detail later in the chapter.

The second strategy for increasing the value of environmental measures was to make them more specific and practical. As Baird (1974) pointed out, most measures were so "global as to be unrelated to concepts suggesting practical actions" (p. 307). This is partly due to the fact that most have been perceptual measures, relying on generalizations, and that they were designed to reflect interinstitutional variance, or how colleges as units vary from one another. This means that local or specifically important concerns may not be reflected in the measures in any useful detail. For this reason, some researchers attempted to develop more detailed measures or techniques.

For example, Warren and Roelfs (1972) developed the Student Reactions to College questionnaire for colleges to use in identifying students' views of institutional strengths and weaknesses. To maximize the instrument's usefulness to staff members and its relevance to students, Warren and Roelfs did not simply develop their own questions; instead, they interviewed students, faculty members, and administrators about what they thought was important to know about their colleges. And on a pretest version of the form, students were asked to write in issues of importance to them that were not covered in the questionnaire. Its first 150 items cover such areas as instruction, grading, faculty and staff contact with students, registration and class scheduling, student activities, financial problems, housing, food services, and transportation. In addition, the questionnaire includes 9 background questions about the student and space for 20 questions that the college can develop itself. The items ask students if they feel their needs are being met.

Betz, Klingensmith, and Menne (1970) reviewed industrial research on job satisfaction for its insights into students' satisfaction with

their colleges, and after a variety of analyses, they developed the College Student Satisfaction Questionnaire, which assesses satisfaction with fairly specific areas: (1) Policies and Procedures (for example, choice of classes); (2) Working Conditions (for example, comfort of residence); (3) Compensation (for example, amount of study required to attain good grades); (4) Quality of Education (for example, making friends); and (6) Recognition (for example, faculty acceptance of the student as worthwhile).

An even more specific technique, the Environmental Referent, has been developed by Huebner and Corrazini (1978), which asks respondents to provide written descriptions of the factors that caused them to experience a particular situation as stressful and incongruent or enhancing and congruent. When common themes appear, the concrete situation is analyzed so that corrective actions can be taken.

In general, then, in recent years, the "environmental description" stream of research has seemed to focus more on relatively specific aspects of the environment that are related to student satisfaction. What began with the rather abstract theoretical concept of need-press congruence, across colleges, has come to emphasize the concrete practical details of specific local conditions.

The Second Stream: Approaches to the College Environment Developed as Part of Other Research Questions

A variety of approaches to the college environment are the result of research projects which attempted to understand an issue in higher education where the environment was of secondary importance. For example, one of the major concerns of research in the late 1950s and the 1960s was the development of "talent," which usually meant some form of academic achievement. Knapp and Goodrich (1952) and Knapp and Greenbaum (1953) conducted some of the earliest of these studies that touched on the college environment. Knapp and Goodrich calculated the *rate* at which colleges' baccalaureates were later listed in *American Men of Science*, and Knapp and Greenbaum examined the rate at which they later won graduate fellowships or earned doctorate degrees. Knapp and Goodrich correlated various factual characteristics of the colleges with the rate of "success" and found that the most productive institutions had moderate rather than high costs, were often small liberal arts colleges, and drew many students from semirural areas. For example, the 10 most productive institutions in this study were, in descending order, Reed, Cal Tech, Kalamazoo, Earlham, Oberlin, University of Massachusetts, Hope, DePauw, Nebraska Wesleyan, and Iowa Wesleyan. Intrigued that these colleges outperformed such institutions as Harvard, Yale, Princeton, Berkeley, Michigan, and Columbia, none of which were in the top 50 in the production of scientists, Knapp and Goodrich did case studies of the institutions to attempt to understand why some colleges were so unexpectedly productive. They examined their histories, finances, students, faculty, and curricula. Although each institution was unique, in general, they were characterized by "a student body in which the scholar is the hero rather than the athlete or socialite" (p. 94). They also did a study of ratings of faculty and found that "productive" colleges had faculty characterized as "masterful," as exemplified by rigorous standards of grading and a high level of energy; as "warm," as illustrated by the use of humor and concern for students; and as having "intellectual distinction," as manifested in intellectual mastery of the field and scholarly production.

As the Cold War progressed in the 1950s, the concern about America's "talent resources" increased greatly (e.g., Wolfle, 1954). One of the consequences was the founding of the National Merit Scholarship Corporation (NMSC) in 1955. The Merit Corporation was founded with the purpose of identifying the nation's most talented high school students and providing financial assistance for their college education. Supported by funds from the Ford Foundation and the National Science Foundation, the NMSC tested several million high school students each year. After a number of studies of the predictors of the academic accomplishment of the very bright students who received scholarships, the NMSC research staff began to explore the conditions in colleges that were associated with the educational attainments of the Merit Scholars, particularly plans to attend graduate or professional school, and to obtain the Ph.D.

One group of these studies stemmed directly from the work of Knapp and his associates. Thistlethwaite (1960, 1963) and Thistlethwaite and Wheeler (1966) conducted a series of analy-

ses using samples of current students, all of whom had taken the NMSC examination in high school. The criteria in the last of these studies were degree aspirations and plans for entry into graduate school of the students as seniors. Statistical controls for initial aspirations, sex, test scores, social class, finances, and initial major were used. Thistlethwaite developed a perceptual measure designed to assess the environmental factors that might influence educational aspirations. There were 14 lower division scales (9 for faculty press and 5 for student press) and 20 upper division scales (12 for faculty press and 8 for student press). Factor analysis of the press scales suggested six factors: excellence of faculty in major field, lower division humanistic and intellectual press, upper division student intellectualism, lower division faculty supportiveness and enthusiasm (all these factors were positively related to plans and aspirations for advanced study), student camaraderie and playfulness, and faculty press for vocationalism and compliance (both negatively related to plans and aspirations). However, it should be noted that none of these variables was as strongly related to plans after the controls were applied as were undergraduate grade-point average and the proportion of the students' friends who were entering graduate school immediately after college. In any case, Thistlethwaite's measures were another perceptually based attempt to analyze the subtleties of the environment, which resulted in dimensions that were quite similar to those found by Pace and other researchers, although the research question was quite different.

The next development at the National Merit Scholarship Corporation was a fairly direct extension of John Holland's (1962, 1966) theory of vocational choice. Holland theorizes that there are six types of vocational choices corresponding to six personality groupings (the Realistic, Scientific, Artistic, Social, Conventional, and Enterprising), and that there are six corresponding types of environments. The environments are consistent with the interests, needs, habits, and interpersonal styles of the personalities. When personality and environment type match, this congruence leads to satisfaction and reinforcement of the individual's characteristics. When they are incongruent, the result is dissatisfaction and dissonance. (A formal statement of the theory will be discussed later in the chapter.) Therefore, in order to study this theory of vocational choice among college students, Astin and Holland (1961) developed the Environmental Assessment Technique (EAT), which is based on the assumption that

> the college environment depends on the personal characteristics of the students, faculty, administration and staff of the institution. Since the undergraduate's personal contacts are chiefly with fellow students, it is further assumed that the major portion of the student's environment is determined by the characteristics of his fellow students. Accordingly the environment was defined in terms of eight characteristics of the student body; average intelligence, size, and six personal orientations based on the proportions of the students in six broad areas of study. (p. 308)

The "orientations" were based on Holland's theory of vocational choice and were estimated by the percentage of students majoring in realistic (or technical) fields, scientific fields, social fields, conventional (or clerical) fields, enterprising (or business and sales) fields, and artistic fields. How did this relatively simple system work? Astin and Holland first found that the EAT variables correlated with the perceptual CCI scores. For example, the average intelligence of students was strongly related to the CCI Understanding Scale, and the Realistic Scale had a highly negative relation with the CCI Humanism Scale.

Astin (1963b) later showed that the EAT correlated with seniors' ratings of their colleges at 82 colleges. For example, he reported that size correlated .57 with the percentage of students reporting that "many of the social groups on campus have a definite snob appeal." Intelligence level correlated .63 with the percentage reporting that "The typical student spends a lot of time in the library"; the realistic orientation correlated .57 with students' reports that their attitudes toward fraternities and sororities had become more positive; intellectual (or scientific) orientation was correlated—.58 with the percentage who agreed that "Many of the students are interested primarily in getting married and raising families"; the social orientation was correlated .41 with the percentage who agreed that "A student who is not very skilled in etiquette or social graces would probably feel out of place on the campus"; the conventional orientation was correlated .56 with the percentage who agreed that "Faculty members usually don't like the student to question their judgment or point

of view"; the enterprising orientation correlated .42 with the percentage who agreed that "Students are always ready to argue or debate almost any issue"; and the artistic orientation correlated—.47 with the percentage who felt that their interest in sports had increased during college. Most of the relations were both sizable and plausible. Altogether, Astin and Holland martialed substantial evidence that the characteristics of the student body have a considerable influence on the total environment.

Richards, Seligman, and Jones (1970) provided evidence that the characteristics of the faculty and the curriculum, as well as the students, have an influence on the environment. These researchers modified the EAT strategy to derive measurements of school environments by counting the number of courses, the numbers of degrees, and the number of faculty members rather than using the proportions of students in the six types of fields derived from Holland's theory.

These three measures correlated with each other, but at a lower level than one might expect, so that scores based on one data source would provide a different "environment" score than scores based on another. For example, faculty and student scores correlated .53 for enterprising and—.18 for conventional. Perhaps more important, the faculty scores correlated only moderately with CUES scores; the highest correlation was—.43 between faculty intellectual (scientific) scores and CUES practicality scores. Correlations between faculty scores and CUES scores that one would predict to be higher often were not. For example, faculty social scores correlated .12 with CUES community scores, faculty artistic scores correlated .19 with CUES awareness scores, and faculty realistic scores correlated .04 with CUES practicality scores. Perhaps a perceptual measure for faculty, like the IFI, would correlate more highly. However, it is plausible to think that if one were studying faculty, these faculty measures might be of value, and if one were studying curriculum, the curricular measures could be used.

Astin (1962) was subsequently motivated by a researcher's desire to provide other researchers "with a more limited set of empirical dimensions which account for the major variations among institutions" for use as independent variables in their studies. Astin's strategy was to factor-analyze the factual information that can be obtained from college directories and fact books such as tuition and number of books in the library. Astin did this for 33 variables concerning four-year colleges and obtained six dimensions that accounted for many of the differences on these variables between colleges (80% of the variance). He called the six dimensions affluence or wealth, size, private versus public control, proportion of males in the student body, technical emphasis, and homogeneity of curriculum and EAT scores. Astin (1963a) then used these measures to show that very bright students were less likely to aspire to the Ph.D. degree in large colleges, predominantly male colleges, and colleges emphasizing clerical curricula. Astin (1965) showed that these scores correlated with student characteristics (e.g., degree aspirations and high school accomplishments) and differed by college types (e.g., technological institutions and liberal arts colleges). He also reported scores for most individual four-year colleges for the purpose of guiding students in their choice of college.

Astin's strategy was subsequently used with junior colleges by Richards, Rand, and Rand (1966), who found six factors: cultural affluence, technological specialization, size, age, transfer emphasis, and business orientation. Richards and Braskamp (1969) showed that these factors were related to a wide variety of average student characteristics. The junior college factors had a few similarities with the four-year college factors. Subsequently, Richards, Rand, and Rand (1968) used the same strategy with medical schools and found four factors: affluence, Canadian versus United States admissions practice, size, and hospital training emphasis. The limitations of these various factual approaches will be discussed later in the chapter.

After moving to the American Council on Education, Astin (1968, 1972) decided that the perceptual approach was too ambiguous, and that what he called the "student characteristics" approach provided too little information about the educational process to be adequate for assessing the college environment. He proposed another approach to the environment, which he called a "stimulus" approach. His idea was that the actual behavior of students and faculty and specific features of the college represent stimuli that have an impact on each student's perceptions of the college as well as on his or her own behavior. An environmental stimulus is "any behavior, event, or other observable character-

istic of the institution capable of changing the student's sensory input, the existence of which can be confirmed by independent observation" (p. 5). Astin asked students to respond to 275 relatively specific items concerning their own behaviors and the characteristics of their peers, classrooms, college rules, and so on. In addition, students responded to 75 items that were similar to CUES items to analyze their "image" of their college. Astin separately analyzed the items referring to the "peer," "classroom," "administrative" and "physical" environments and found 27 dimensions on which colleges differed from one another. Analysis of the "image" items produced eight additional factors, resulting in 35 dimensions to describe the college environment.

The content of the factors was clearly dependent on the particular items Astin had used. For example, the "peer environment" factors ranged from the general factor "competitiveness versus cooperativeness" to "regularity of sleeping habits." All of the "administrative" environment scales consisted of factors whose names began with "severity of administrative policy against . . ." since all the original items referred to rules. Although some students may be strongly affected by rules and their enforcement, most students are affected in more areas of their behavior by such administrative decisions as tuition, registration, and degree requirements. And, of course, students are also influenced, albeit indirectly, by administrative policies that are usually beyond their knowledge, such as requirements for hiring and promotion of faculty and the allocation of the budget. Thus, Astin's description, in spite of its 35 dimensions, seems quite limited in some areas, even if we accept Astin's "stimulus" idea. There are other aspects of the college that serve as unperceived or indirect "stimuli."

In addition, although the interpretations of original factors are based on all the loadings in a factor analysis, the actual "scales" used in the Inventory of College Activities are amazingly short. Of the 25 "stimulus" scales, 12 are three items long, six are two items long, and seven consist of one item. Sometimes the content is peculiar, as often happens in studies based on the factor analysis of a hodge-podge of variables. For example, the percentages of students who said that in the past year they had gambled with cards or dice, had *not* participated in an informal group sing, and had *not* voted in a student election are weighted and summed to measure "competitiveness versus cooperativeness," "Informal dating" was measured solely by the percentage of students who said they had fallen in love in the past year.

Furthermore, many of the items seemed problematical; some seemed as "perceptual" as other instruments, for example, the three items that composed the "Extraversion of the Instructor" scale; "The instructor was enthusiastic," "The instructor had a good sense of humor," and (scored negatively), "The instructor was often dull and uninteresting." More generally, it is hard to see how many of the items which refer to private behavior that is usually unobservable by other people could be "stimuli" for other students in the aggregate, for example, "I had a blind date," "I took weight-reducing or dietary formula," and "I overslept and missed a class or appointment." In sum, although the general *idea* of examining the physical, social, intellectual, and organizational stimuli that impinge upon students for keys to the environment seems to have considerable potential, this particular attempt does not seem to fulfill that potential. An approach that is based more on theoretically, or even intuitively, based ideas and less on a shotgun approach would be much better. I shall return to this point later in the chapter.

Creager and Astin (1968) factor-analyzed ICA scores from the research just described as well as variables from earlier factual analyses: the colleges' affluence, size, and so on, and such "commonsense" variables as type of control and region of the country. Most of the resulting dimensions placed great weight on the commonsense and factual data. This suggests the possibility that we may be able to infer a good deal about a college from a few basic facts without a much more extensive investigation. For example, the first factor, Drinking versus Religiousness, has high negative loadings on selectivity, status, and private nonsectarian control as well as high positive loadings on severity of the policies against drinking, sex, and aggression. Thus, if we knew that a college was private, nonsectarian, highly selective, and prestigious, we could make a pretty good guess that it would be a free and open campus with regard to drinking, sex, and so on. The greatest weight on the second factor was given to the proportion of males at the school, the third factor to the size of the student body, the fourth to the presence of

Roman Catholic colleges in the sample, and the fifth to technical institutes. The rest of the weights on these factors were consistent with general expectations about such institutions and consisted of the "stimulus" and "image" factors as well as other commonsense variables. In general, many of the differences between colleges were associated with commonsense distinctions, suggesting that some typology of institutions could be developed that would provide us with a great deal of information about colleges. For example, we know a lot about a college just by knowing that it is a selective engineering college in the Northeast or an unselective womens' Catholic college in the Midwest.

In contrast, when Astin and Panos (1969) studied the influence of college environments on the vocational and educational plans and achievements of college students, the stimulus and image measures had a considerable influence, independent of and sometimes larger than the commonsense or factual variables. In predicting 28 criteria after controlling for input, commonsense and factual environmental variables appeared in the equations 88 times, while "stimulus" and "image" factors appeared 68 times. Although the stimulus and image factors seemed to have more powerful influences on educational aspirations and plans than upon career choices, which were influenced by the composition of the student body, they seemed to be getting at something unique in college environments that influence students' development. Thus, while we may know a good deal just by knowing the facts about a college, we still need to know more to really understand its environment.

Recent Research on the College Environment

Interest in the topic of the general college environment seemed to subside in the 1970s. Instead, researchers began to focus on subenvironments and more specific aspects of the college experience, which more directly impinge upon the behavior of students. The two major research efforts in these areas were conducted by Moos, who concentrated on subenvironments, and Pace, who concentrated on student experiences.

Moos (1979), who began his career studying therapeutic milieus, turned his attention to residence units in colleges. The eventual product of his research was the University Residential Environment Scales (URES). Partly from his psychiatric background, Moos proposed that environments can be seen as having three domains of social climate and their related dimensions: *relationship* dimensions, which assess the extent to which people are involved in the setting, the extent to which they support and help one another, and the extent to which they express themselves freely and openly; *personal growth* or goal orientation dimensions, which measure the basic goals of the setting, that is, the areas in which personal developmental self-enchancement tends to occur; and *system maintenance and change* dimensions, which measure the extent to which the environment is orderly and clear in its expectations, maintains control, and responds to change.

The URES designed to measure these constructs consist of 9–10 items each and measure 10 dimensions, which are grouped into "domains." These 10 scales, with typical items, are as follows:

Relationship Domain

1. Involvement ("There is a feeling of unity and cohesion here").
2. Emotional Support ("People here are concerned with helping and supporting one another").

Personal Growth Domain

3. Independence ("People here pretty much act and think freely without too much regard for social opinion").
4. Traditional Social Orientation ("Dating is a recurring topic of conversation around here").
5. Competition ("Around here, discussions frequently turn into verbal duels").
6. Academic Achievement ("People here work hard to get top grades").
7. Intellectuality ("People around here talk a lot about political and social issues").

System Maintenance and Change Domain

8. Order and Organization ("House activities are pretty carefully planned here").
9. Student Influence ("The students formulate almost all the rules here").
10. Innovation ("New approaches to things are often tried here").

The validity of the URES approach was suggested by a series of studies. Some correlated URES data about dormitories with other information about dormitories (Gerst and Sweetwood, 1973); others used the URES to construct a typology of student living groups (Moos et al., 1975); some related URES scores to the influence of living groups on students' vocational choices (Hearn and Moos, 1976); and still others studied the effects of "megadorms" (Wilcox and Holahan, 1976).

Moos (1979) also developed a College Experiences Questionnaire, which was designed to assess the consequences of college attendance in four general areas: styles of coping with college life; personal interests and values; self-concept, mood, and health-related behaviors; and aspiration and achievement levels. Moos and his associates administered this instrument to students in 52 living groups on two campuses at the beginning and at the end of their freshman year. Moos also administered the URES. Moos first identified clusters of living groups based on the similarity of their URES profiles. These clusters include relationship-oriented groups, traditionally socially oriented groups, supportive achievement-oriented groups, competitive groups, independence-oriented groups, and intellectually oriented groups. When Moos compared the changes in group scores using a comparison of residuals (actual versus predicted scores), there were distinctive impacts of each grouping, with the interesting exception that competitive groups had no significant effects on any outcome. Residence groups had no influence on any of the measures of self-concept and mood, or on the coping style of "hostile interaction", but had a considerable effect on "student body involvement" (such as attending a school political rally and voting in a student election); academic orientation (participating in a science contest or being a member of a scholastic honor society); and achievement level (grade-point average). Other research examined the influence of the groups on students' health. Moos and Van Dort (1977), for example, found that groups with low social and emotional support and high competition had higher than average reports of stress and physical complaints.

Additional evidence about the idea of the importance of the environment of living groups comes from a variety of studies. For example, Winston, Hutson, and McCaffry (1980) found that while the fraternities with the highest grades on one campus had no higher average SAT scores than the fraternities with the lowest grades, their URES scores showed that the high-achieving fraternities scored significantly higher on the Academic Achievement and Intellectuality scales and lower on the Independence scale. However, occasional negative results, at least those using Moos's approach, cast doubt upon the idea that the residence group environment influences grades. For example, Ballou (1985) found numerous differences among types of residence halls on the URES, but the type of residence was unrelated to grades, student participation in campus activities, and health habits. These inconsistent or complex, even muddled, results are much like those in a good deal of the research on residential units.

However, Moos's strategy can be seen as a fairly direct continuation of Astin and Panos's (1969) comment on their extensive analyses of the influences on the vocational and educational development of a large sample of students and institutions:

> Since most of the environmental effects of our 246 institutions appeared to be mediated through the peer environment rather than the classroom, administrative, or physical environments, further study of the nature and influence of undergraduate peer groups is clearly indicated. At the same time, a greater effort should be devoted to the identification of other effective environmental variables which are more directly manipulatable and not so highly dependent on the characteristics of the entering students. (p. 158)

Residence groups are clearly a major force in the peer environment, and one that can often be manipulated to have rather different characteristics. More generally, Moos's strategy represents

a move away from interest in the global or distal environment and toward a concern with the local or proximal environment and the use of important subgroups rather than the institution as a whole as the unit of analysis, which may be a more fruitful research approach.

Pace's attempt to assess students' quality of effort, while not designed to provide a measure of the environment, does, in fact, demonstrate large differences among types of colleges not only in the average "level of effort," but in the specific incidence of particular experiences of students, some of which must be due as much to the type of college they attend as to their own effort.

The instrument Pace developed to assess these ideas was the College Student Experiences questionnaire (CSEQ), a standardized self-report survey of how students spend their time and the nature and quality of their activities (Pace, 1987). Students respond by checking "never," "occasionally," "often," or "very often" for activities in 14 clusters of mostly 10 items: Library Experiences; Course Learning: Art, Music, and Theater; Science Lab Activities; Student Union; Athletic and Recreation Facilities; Dormitory or Fraternity/Sorority; Experiences with Faculty; Clubs and Organizations; Experiences in Writing; Personal Experiences; Student Acquaintances; Topics of Conversation; and Information in Conversation. The items are arranged in a hierarchy so that participation in a high-level activity is qualitatively different from participation in a lower level activity.

Although not designed to measure environments, the norm group information by type of college suggests major differences in the experiences of students among types of institutions which, if the "aggregate behavior" approach is used, would play a larger role than the characteristics of the students in defining the character of the environment. Baird (1987) compared CSEQ scores of doctoral universities, comprehensive colleges, and universities, selective liberal arts colleges, general liberal arts colleges, and community colleges and found fairly sizable differences. Although the community college students understandably reported a lower rate of activity and involvement in many out-of-classroom areas, especially in athletics and recreation, clubs and organizations, art, music and theatre, and student acquaintances, they reported an activity rate equal to other types of colleges in the areas of library usage, writing, and interactions with faculty. Thus, the *academic* side of the college experience was strong in community colleges, but the nonacademic side was not, probably due to the high rate of commuting. In contrast, doctoral universities were below average in library usage, writing, and interactions with faculty. Comprehensive colleges and universities were below average in athletics and recreation, clubs and organizations, and student acquaintances. General liberal arts colleges' students reported a high rate of activity in interactions with faculty, use of the student union, athletics and reaction, and clubs and organizations. Selective liberal arts college students reported the highest levels of activity of all groups in the areas of use of the library; interaction with faculty; art, music, and theater; student union; athletics and recreation; clubs and organizations; and student acquaintances.

More specifically, students at doctoral universities reported the lowest frequency of any type of college of "working on a paper or project where you had to integrate ideas from various sources," "talked with a professor," "asked your instructor for information related to a course you were taking (grades, make-up work, assignments, etc.)," "visited informally and briefly with an instructor after class," and "made friends with students whose age was very different from yours."

The comparison of doctoral universities, which were only average in most areas, and which were below average in several, with selective liberal arts colleges, which were superior to other colleges in a variety of areas, suggests several points. First, these differences held, although these two types of colleges are fairly comparable in quality of facilities and faculty. Thus, it is not so much the *presence* of facilities, funding, and staff, but the uses to which they are put that determines their educational impact. The second point is the importance of the emphasis that different types of colleges place on undergraduate education in the quality of the experience for students. Both of these points illustrate how different environments can influence behavior.

An interesting demonstration of the interaction of environment and "effort" is shown in some results provided by Pace (1984) in which the the predictors of student satisfaction and students' sense of gain in five areas were studied. The independent variables were the "quality of

effort" scales, student background characteristics, a brief student assessment of the college environment (nine items for nine characteristics), and college status. The brief environment scores were the best predictors of the criterion of satisfaction in every type of college. Turning to sense of gain, college status variables (class, major, degree plans, grades, residence, and hours employed) accounted for the largest amount of variance (increases in R^2 ranged from .19 to .33), but the environment items made the next largest contribution to prediction in three of five areas (ranging from .11 to .14). Quality-of-effort scales were next in these three areas and were next to background in the other two areas.

In sum, current work in college environments seems to be concentrating on subenvironments or is concerned with more specific aspects of the environment that can be used for particular research projects. Examples of the latter include types of student-faculty interaction (Pascarella and Terenzini, 1978, 1980); academic alienation and political climate (Long, 1976, 1977); student perceptions of cheating and attitude toward cheating of other students (Haines et al., 1986); minority students' feelings about the level of discrimination and the quality of peer relations (Nettles, Thoeny, and Gosman, 1986); and compatibility of the work environment among graduate faculty (Baird, 1986). Additional measures of environment have been developed in secondary analyses of existing data sets. For example, Pascarella (1984) reanalyzed data from a longitudinal sample of college students and developed three very brief scales of "academic or intellectual competition," "impersonalism and inaccessible faculty," and "conventional or conformist press." These variables had modest effects on students' aspirations. Although these variables are much more appropriate to the research problems involved in the studies than global measures of the environments, they do not in themselves further our understanding of how the overall college operates and how it influences students and faculty.

Criticisms of Currently Available Approaches to the Environment

Although there is a long research history devoted to the college environment, there are many problems in the area. These can be divided into the technical-logical and the theoretical. Many of the approaches to the college environment are based on an assessment of the perceptions of students, faculty, administrators, and sometimes others. Measures of student and faculty perceptions of the environment have several difficulties. The first is the ambiguity of what an aggregate perception of an environment means. A person's perceptions of a social situation depend on many things, as Feldman (1972) and Chickering (1972) have pointed out. Students' interests and characteristics help determine the colleges they choose to attend. Students' characteristics then form part of the total environment. For example, the presence of many bright, intellectual students may lead an individual student to perceive the whole college as intellectual. In addition, students select subgroups, major fields, courses, and activities consistent with their interests and characteristics. Professors and administrators likewise have different patterns of experiences. These experiences compose their sampling of the total physical and interpersonal environment and thus the way in which they perceive the environment. And even these perceptions are influenced by their personal characteristics and social position. For example, students who think of their college may think first of their classes, a president may have uppermost in his or her thoughts the budget, a professor his or her research, and a dean his or her work with curriculum reform.

This problem may be particularly difficult when there are distinct subenvironments in the campus, since the scoring of most instruments sums across the subenvironments. For example, at a highly politicized college, the disparate perceptions of a leftist subgroup and a conservative subgroup may cancel each other out, and the college would appear to be nonpolitical on the environmental measure. Having said this, we should note that the evidence about the influence of personal characteristics on perceptions of the college environment is limited. For example, Pace (1966), Hartnett and Centra (1974), and Moos and Bromet (1978) have provided evidence that personal characteristics have little influence on environmental perceptions, and that environmental scores for subgroups are seldom different from the scores of the majority. Although subgroups may have different college experiences, they seem to describe the total environment in much the same way (e.g., Berdie, 1967).

It is also clear that the accuracy of perceptions depends on the knowledge of the respondent, a factor which varies from person to person and from area to area. For example, most students know very little about some aspects of faculty life, and commuting students have little to say about life in the dormitories. Furthermore, some respondents may report stereotypes or rumors, particularly when an item refers to activities that are not publicly visible, for example, when a student believes that other students do not study very much, just because he or she cannot see them study.

A major limitation of the perceptual approach is that a person can describe only those aspects of the college covered by the items in the instrument and only in the particular way the items allow. This difficulty is increased since the items in environmental instruments, of necessity, tend to be general and without precise referents. The items must refer to things that are common to all or most colleges and then must be phrased in such a way that they can be answered by people from any subgroup of the college.

Since many of the important aspects of the atmosphere of a college tend to be elusive and can be captured only by items that ask for the respondent's overall impressions, even the most skillfully prepared items will appear vague or ambiguous. This ambiguity can lead to descriptions of environments that may bear little relationship to the realities of campus life. For example, Chickering (1972) found extremely large differences among four colleges in their students' reports of the percentage of their classroom time they spent in different behaviors (e.g., listening and taking notes primarily to remember, thinking about the ideas presented); studying outside of class (memorizing, synthesizing ideas); or using information (applying concepts or principles to new problems, interpreting). The colleges also differed greatly in descriptions of specific instructor behaviors, students' reasons for studying, feelings about courses, and patterns of academic work (pace and promptness). However, on the CUES Quality of Teaching and Faculty Student Relationship scale, the colleges were very similar. In contrast, at the two colleges with the highest CUES scholarship scores, students spent the least time thinking about ideas in class and spent the least amount of studying time synthesizing, applying, and interpreting their assignments. In short, this study raises the possibility that general impressions may not correspond to specific behaviors.

Of course, there are the ambiguities that arise when the responses of individuals to each item are combined with those of the other respondents. These combined responses thus reflect the degree of consensus among the reporters as well as the intensity of the environment. For example, when half the students only moderately agree that "the college encourages individual freedom," it is quite different from when half strongly agree and half strongly disagree with the item. The items are also typically summed on a scale, the meaning of which has been decided by the authors of the instrument. In many cases, the items have been selected for strictly statistical reasons and may have slight coherent meaning. For example, the Inventory of College Activities "Cohesiveness" scale consists of the items "I discussed how to make money with other students" and "Freshmen have to take orders from upperclassmen for a period of time."

Because of the generality and ambiguity of perceptual measures, they are not very useful to people who want to evaluate or change their colleges. For example, what can an administrator do with the finding that his or her college scored at the 50th percentile on a scale of "friendliness"? The administrator finds nothing in the score to serve as a guide to action; doesn't know if the 50th percentile is good or bad; and is not sure what the "friendliness" scale really measures. However, an unexpectedly high or low score can be a "red flag" that can identify potential problem areas that can be the subject of more pointed, detailed investigation. A student choosing a college may find perceptual scores more useful.

Perhaps the most fundamental problem with the perceptual approach is its assumption that reports of individual perceptions in fact represent some kind of agreed-upon reality. That is, how can we logically move from the level of an individual's view of an institution to the level of a characteristic of the entire institution for everyone? As Feldman and Newcomb (1969) pointed out:

> To know whether the "is" of the environment represents pressures on students, one needs to know such things as the degree to which there is shared awareness about the desirability of certain attitudes and behaviors, the

> structural arrangements and systems of rewards and punishments that implement and ensure conformity to norms, and the degree to which individuals accept these norms. (p. 72)

A central problem for the perceptual approach, then, is to find procedures to determine "shared awareness," and to determine how "shared awareness" and individual perceptions interact to form an environment. Even more important is what the "environment" really represents, and whether and how it influences behavior.

Factual Approaches

Demographic, financial, and other "objective" information about institutions can tell us a good deal about institutions and can also be quite misleading. For example, one might make many assumptions about the character of small Roman Catholic liberal arts colleges for women that are located in large cities. However, this category includes Alverno College in Milwaukee, Mundelein College in Chicago, and Mount Vernon College in the District of Columbia, which are very different institutions. Size, a variable found in many studies, and used as evidence of "validity" in others, has rather problematical significance. For example, Ohio State, with the largest enrollment in the United States on one campus, actually spends a larger *proportion* of its budget on instruction than many smaller institutions. Michigan State, another extremely large campus, has made great efforts to create separate"subcolleges" within the university.

More generally, the problem with size, as with "objective" measures, is that it is, in reality, no more objective than any other piece of information. That is, to be objectively valid, a piece of information must lead to accurate and meaningful interpretations of current phenomena and have logical and empirical connections to, or predictions of, other phenomena (Cronbach, 1969). What does an enrollment of a certain size mean? What are its psychological and sociological implications? Do the students at a college with an enrollment of 1,000 feel they are in an institution that is twice as "large" as one with an enrollment of 500? What about an enrollment of 40,000 compared to one of 20,000? The point is, without theories and evidence about the measuring of such factual variables, such as Barker's behavior-setting theory (1968), we are using them based only on vague intuitions. In addition, "objective" data can vary to a much greater extent than is sometimes assumed. For example, there are many ways to calculate enrollment, based on varying definitions of students—full-time equivalents, etc.—and these can be calculated in different ways. For example, an institution may report one figure on enrollment to the legislature if an enrollment-driven budget system is used but may use quite another figure when it is calculating its average student-faculty ratio for reporting in recruiting literature.

Another example of the problematical meaning of factual measures is "affluence" or the wealth of the institution per student. Although one might assume that larger endowments and operating budgets would make life more pleasant for students, the monies may be spent in very different ways. In some calculations prepared by Charles Elton (1987) comparing the budgets of institutions with the highest rated graduate programs, the dollar amounts and the percentages of the budget spent on instruction, research, and service varied dramatically, even though all the institutions were relatively wealthy. Detailed analyses of the budgets of these institutions may reveal even greater differences in how funds are actually spent, which may indicate that interpretations of the categories based on their face value are based on erroneous assumptions. For example. much of the money spent on instruction may actually go to support some "stars" on the faculty, who may see very few students, or the funds spent for minority student affairs may chiefly go to administrators and their staffs, not to students. To illustrate the point another way, no one would confuse New York University and Dartmouth. However, the values of their endowments are very similar. In short, to properly use "factual" information to understand institutions, we need to examine it in considerable detail just to see if the data represent what we think they do. However, the most fundamental problem with "factual" information is that it is, in itself, *not* the environment. Factors such as size or affluence create the conditions for the environment but should be kept distinctly separate in our thinking about the environment. They are probably best considered contextual variables.

Theoretical Criticisms of Current Approaches to the College Environment

There are many approaches to the college environment, but few of them provide comprehensive accounts of how colleges and universities operate and influence students. To some extent this is understandable, since colleges and universities are very complex social institutions. Although the research efforts just reviewed are based on various notions of what is important to attend to in the college environment (e.g., needs and press, "fit," institutional "functioning," goals, the characteristics of people in the institution), they have, in fact, very few theoretical propositions that can be tested unambiguously—and fewer conceptions of *mechanisms* to explain how colleges operate and affect the people in them.

For example, the needs-press approach has essentially one proposition: that when students' personal characteristics "fit" or are "congruent" with the environment, the students are more satisfied, perform at a higher level, and have greater commitment to the institution. Why and how these consequences follow is not really explained; that is, there is no mechanism to explain the operations and effects of "congruence" except for a vague idea of needs being "met." Further, one might argue with the basic concept, based on the ideas of Feldman and Newcomb (1969), Chickering (1969), and such theorists as Loevinger (Wethersby, 1981) and Perry (1981), who emphasize the critical role of challenge in promoting change and growth in college students. That is, it is not *congruency* that is conducive to growth, achievement, and, eventually, satisfaction, but *incongruity*, that is, a challenging, if supportive, environment.

The approach used by Astin and Holland in the EAT, quoted earlier, and by Richards in subsequent work (Richards et al., 1970) is that characteristics of individuals compose the environment operationally (the basic assumption of the EAT is that "students make the college," according to Richards et al.). The sheer number of people in a given category of occupational or major choice therefore defines the environment. Holland's (1985) explanation is that, since people in a given vocational or major group tend to have similar personalities, they will respond to many situations and problems in similar ways and will therefore create characteristic interpersonal environments. Again, it is unclear why this is supposed to be the case; that is, there is no mechanism other than an equally general idea of "reinforcement" to explain the contention. In other words, *how* do people with similar personalities create environments? Do they agree on goals? Do they create contingencies or rewards and punishments that promote certain behaviors and attitudes just by being together? How does reinforcement work?

Beyond the contention that the personal characteristics of the members define the environment, the remaining proposition of Holland's theory is, in structure, the same as in need-press theory: congruence. Holland (1985) does expand upon the concepts:

> People find environments reinforcing and satisfying when environmental patterns resemble their personality patterns. This situation makes for stability of behavior because persons receive a good deal of selective reinforcement of their behavior. The greater the discrepancy between people's personality patterns and environmental patterns, the more dissatisfying, uncomfortable, and destructive these interactions become. . . .

Incongruent interactions stimulate change in human behavior; conversely, congruent interactions encourage stability of behavior. Persons tend to change or become like the dominant persons in the environment. This tendency is greater, the greater the degree of congruence is between person and environment. Those persons who are most incongruent will be changed least. Or, the closer a person is to the core of an environment, the greater the influence of the environment.

A person resolves incongruence by seeking a new and congruent environment, by remaking the present environment, or by changing personal behavior and perceptions.

A. Differentiation and consistency of personality pattern as well as identity usually make for a change of environment in the face of an incongruent environment.

B. Persons with differentiated and consistent personality patterns and clear identity are more apt to remake the environment itself, if they cannot leave it, to achieve

greater congruence. For example, people usually hire people whom they like or see as congenial.

C. Persons with undifferentiated and inconsistent personality patterns and diffuse identity tend to adapt to incongruence by changing their own behavior and personality pattern to achieve greater congruence with their environment.

D. A person's tendency to leave an environment increases as the incongruity of the interaction increases. (pp. 53–54)

Although there are some inconsistent propositions in this statement, the key *mechanism* lies in the phrase "reinforcing and satisfying" and "selective reinforcement," and in the idea that people who are sure of themselves will change their environments, while people who are unsure of themselves will be changed by their environments, although there is little explication of how this works.

The remainder of the approaches to the environment are chiefly atheoretical, although they sometimes have implicit theories, as have been noted when these approaches were described. Perhaps this atheoretical quality is due to the difficulty in conceptualizing something as complex as colleges' environments, as suggested in the following section.

The Road Ahead: Needed Theoretical and Empirical Work

The review of the majority of the work in analyzing and understanding the college environment covered a great deal of research activity through the 1960s that continued into the early 1970s. This work raised many fundamental issues, suggested in the description of the research, which seemed to have resulted in some very difficult questions, such as the following:

1. Is there such a phenomenon as a "college environment" that somehow includes and also exists beyond the perceptions and characteristics of the individuals in it?
2. How, specifically, can we logically and empirically deduce the characteristics of a group or an overall environment from the perceptions and characteristics of its members?
3. How, specifically, can we relate financial and organizational conditions to the characteristics of the overall environment?
4. What are the most salient and potent aspects of the environment? For which criteria?
5. How can we best conceive of these aspects and their interaction?
6. How, specifically, do environments influence the individuals in them?
7. What are the "subenvironments" on campuses (which may not correspond to traditional groupings at all)?
8. How do "subenvironments" interact with the overall environment?
9. How do we deal, conceptually and technically, with the multiple overlap among subenvironments? For example, a student may be a sophomore, an English major, a member of a fraternity, enrolled in ROTC, a member of an intramural team, and work part time in the book store. How can we assess the influence of these different possible subenvironments, let alone others which may escape our categorizations, as, for example, students who are fervent fans of a particular rock group?

It is easy to recognize the difficulty, perhaps even the intractability, of these questions about the overall environment, but we should note that many of them apply equally well to assessments of parts or details of colleges that are only apparently more easily conceptualized and assessed. However that may be, the key tasks seem to be to develop better theories of college environments and to deal with the problems of interrelating individual perceptions or characteristics to those of the global environment.

Organizational Research Contributions to Understanding and Assessing the Environment

Contributions of Organizational Research to Considerations of the Level of Analysis

One of the recurring problems in research on the college environment is the level of analysis. That

is, how do we relate the levels of the individual, the subgroup, and the overall environment? Researchers in organizational behavior, particularly organizational climate, have attempted to deal with this issue in considerable detail. Rousseau (1985) described some of the complexities and distinctions. The object of the research (individual, subgroup, or total institution) is the *focal unit*. Research on the focal unit involves two kinds of levels: *level of measurement*, which refers to the unit to which data are directly attached (for example, self-reports of personal behaviors are usually at the individual level, the number of people is measured at the group level, the and degree of bureaucracy at the organizational level). The *level of analysis* is the unit to which data are assigned for hypothesis testing and statistical analysis.

However, Rousseau points out that, in practice, the level of measurment and the level of analysis may not correspond, and that neither may be the level to which generalizations are made. This leads to the error of misspecification which "occurs when we attribute an observed relationship other than the actual behavioral or responsive unit." For example, if faculty's scores on the IFI Democratic Governance Scale at a particular college were correlated with the number of articles they published, it would be a mistake to conclude that democratic governance leads to research productivity; that is, we risk misspecification. Another common error lies in the aggregation of data based on homogeneous groups which, when correlated, yield higher results than when individual data are used, or are actually artifacts due to other factors. For example, the correlation between college mean SAT scores and the percentage of seniors planning to go to graduate school is higher than the correlation between SAT scores and graduate school plans based on individuals. A related error is the cross-level fallacy, which exists when the same construct is used inappropriately to characterize phenomena at different levels. For example, *colleges* don't behave; *individuals* behave.

The contribution made by organizational researchers is to compose models and logical rules that provide for careful reasoning about evidence of the influence of one level on another. For example, the overall college culture may create group norms that influence individual behavior. The task for researchers is to assess each of these kinds of variables, (i.e., culture, group norms, and individual behaviors) and to analyze how they influence each other. As Burstein (1980) has pointed out, different variables may enter a model at different levels and may mean different things at different levels. For example, in the international mathematics study, the perceptions of the teachers' friendliness may mean something quite different when the individual student, the classroom, the school, the school system, or the country is the unit of analysis. Burstein (1980) and others have developed statistical procedures for giving the proper weight to these different levels in the prediction of achievement; that is, they have partitioned the variance.

Some of the models that organizational researchers have developed to deal with multiple levels include composition models, which relate nondependent variables across levels; cross-level models, which relate independent and dependent variables at different levels; and multilevel models, which relate independent and dependent variables generalizing across two or more levels (see Rousseau, 1985, for an explication of these models). An example of a composition model is provided by James (1982), who argues that when the definitions of organizational "climate," are the same at the individual and the unit levels, then psychological and organizational climate represent the same construct. For example, when professors' academic rigor means the same thing at the level of the individual student and at the level of the classroom as a whole, then it is the same construct. The criterion for equivalent definitions is perceptual agreement, according to James. When unit members perceive the unit in the same way, they share psychological meaning, perceptual agreement exists, and therefore, psychological and organizational climate represent the same construct. However, it is important to keep the levels distinct and carefully in mind when we study a particular criterion.

For example, Hulin and Rousseau (1980) report a series of studies that demonstrate these differences. Studying a phenomenon that is comparable to attrition among college students, employee turnover, they found that while economic factors explain 70% of the variance in unit-level turnover rates, individual attitudes and behavioral intentions explain 70% of the variance in *individual* turnover rates.

Cross-level models would include studies of such phenomena as the influence of college environmental characteristics, such as CUES community scores, on individual behavior, such as the individual's satisfaction with the social life of the college, and would use contextual moderators, such as a college's location or private-public status, that affect these relationships.

The third type of model, the multilevel model, examines phenomena and their consequences at individual, group, and organizational levels. For example, Staw, Sandelands, and Dutton (1981) examined the parallel processes by which individuals, groups, and organizations cope with adversity. The general process that was common across levels was that threat produced rigidity, a process that the behavior and the decisions at each level reinforced and solidified.

There are many other examples of these models in organizational research, but the lesson for researchers in higher education is that fellow researchers have wrestled with the same issues and types of constructs that concern researchers studying the college environment. Organizational researchers provide guidelines and techniques for careful reasoning about relating data, variables, and constructs from one level to another (see Roberts and Burstein, 1980, for discussions of statistical methods). One possible application would be to study in a single model the individual, peer-group, and college influences on students' aspirations toward graduate school.

Insights and Possibilities from Organizational Theory

In organizational research, there are many potential contributions of theory to the understanding and assessment of college environments. First is the variety of theories that have been considered (Benson, 1983; Hauser, 1980; Lawler, Nadler, and Cammann, 1980). Some of the more recent of these theorists include, at one extreme, the demythologizers, who argue that the idea that organizations are rationally articulated structures organized to meet specific goals is a myth, especially as it applies to educational institutions (e.g., Meyer and Rowan, 1978; Weick, 1976). What is important, according to this view, is to keep a particular coalition in power. Rituals and symbolism are used to convince others of the legitimacy and rationality of the organization. For example, a university has a variety of rituals to assume legitimacy among other people, including hiring a ritually approved staff, offering a conventional curriculum, granting credentials, and satisfying accrediting agencies and professional associations. However, the university goes to great lengths to be sure that the core of the teaching and learning process is not evaluated by external groups. Given that the goal is simply the perpetuation of the organization, not the rational meeting of goals, the organization can allow opposing interests to exist and can use multiple nonaccountable administrative structures. However, this very nonrational structure allows the organization to be quite adaptable to changing conditions. The demythologizers would have us look less at organizational structures in colleges and more at rituals, symbols, and their functions, and at how colleges construct our views of reality.

Another class of recent theorists are termed the "politicizers" by Benson (1983), because they argue that power considerations, particularly the control of resources, are the key to organizations. For example, organizational decisions may be made as much to maintain or enhance the control of a power coalition as to enhance efficiency and effectiveness. Even technical decisions may be largely based on political considerations (Pfeffer, 1981). This group of theorists would argue that in order to understand why environments have the characteristics they do, we need to examine the underlying power coalitions in colleges at universities and how their relations affect decisions, rather than the colleges' purported educational goals.

Another group, the "ecologizers" (Aldrich, 1979; Hanf and Scharpf, 1978), go beyond the single organization to focus on interorganizational power-dependence relations. These theorists would have us concentrate on the relations between colleges, state legislatures, major economic groups, and professional agencies and examine how those relations influence the environment. For example, part of the growing environmental press for "vocationalism" on many campuses may stem from the demands of professional organizations and state or federal agencies.

Another group of innovative theorists are the "totalizers," who examine how organizations are entangled in the economic and political structure of the total society, as well as their role in the reproduction or maintenance of that structure.

The totalizers concentrate on the place of organizations, networks of organizations, and populations of organizations in the total social structure. Thus, they would have us examine how colleges and universities have been and are linked to technological and economic developments. They would then have us examine how these developments influence the internal structure of colleges, following a Weberian analysis (McNeil, 1978) or how they are part of a capitalistic domination, following a Marxian analysis (Clegg and Dunkerley, 1980). The view of colleges and universities in Collins's *The Credential Society* (1979) and the views of the true purpose of liberal education by Rossides (1984) can be considered in this category.

Other theorists have studied a variety of additional concepts, including that of organizational evolution (Tushman and Romanelli, 1985), focusing on considerations of forces for stability and forces for fundamental change, and identifying the reasons for periods of relative calm or convergence and periods of reorientation or divergence. These are associated with internal requirements for coordinated action and external demands or challenges for the organization. This research has led some even to propose institutional "life cycles," although this concept is controversial (Cameron and Whetten, 1983). In any case, this approach suggests determining where an organization is in its evolution in order to understand its priorities, structure, and functioning, Kimberly (1980) provides an example of this kind of analysis in a study of an innovative medical school.

Another approach, developed by Albert and Whetten (1985), is that of "extended metaphor analysis" in which the organization being analyzed is compared to a set of alternative organizations. Albert and Whetten developed this method when they attempted to define organizational identity, that is, how an organization answers the questions "Who are we?" and "What do we want to be?" They proposed that organizational identity is composed of a claimed central character, claimed distinctiveness from other organizations, and claimed continuity and consistency over time. However, these authors found that institutions can often have dual, even multiple, identities, illustrating this idea with the modern research university. To explicate the dual identity of the university, these authors used the metaphors of the church and the business organization. They compared these organizations in terms of their ideological claims, their socialization procedures, their organizational pattern, and, most important, their normative versus utilitarian functions. These have implications for decisions during times of retrenchment, attitudes toward leadership, and attitudes toward marketing the organization. The method of extended metaphor analysis, then, also suggests different ways of viewing the college environment.

Another potentially useful approach is the study of organizational demography (Pfeffer, 1983). Particularly appropriate for the faculty environment, this approach examines the demographic characteristics of the staff, such as age, sex, ethnicity, SES, and especially length of service. These characteristics influence such variables as acceptance of innovation and adaptability, the form of control employed and the size of the administrative staff, cohort identity, and mobility aspirations. The effects of organizational demography in colleges can be seen in such areas as the "graying of the professoriate" and the increasing numbers of "new students" and "returning students." Although these factors have been discussed on a national level, the effects of the demographics of the student body, the professors, and the administrators on individual college environments have not been explored systematically. However, it seems very plausible that the environments of colleges with a high proportion of returning or older students would be different from colleges with low proportions. These possibilities are worth exploring.

One significant contribution of organizational behavior research is the explication of the idea of *fit*. As described by Nadler and Tushman (1980), there are at least six definitions of *fit*, as shown in Table 6-1.

The drawback of this delineation of the varieties of fit, or congruence, is that it does not show how to deal with multiple fits. For example, a student may fit quite well in a residence group which has an antiacademic, social orientation, which does not fit with the college's academic orientation. When the residence group is involved in a "task" that has an academic purpose, there may be a further lack of fit. Situations like this may explain why studies of congruence have obtained such disappointing results. That is, a student can be congruent with some aspects of a college and incongruent with others. It may be the total *level* of congruency, or his or her

TABLE 6-1
Definitions of Fits

Fit	*The issues*
Individual-organization	To what extent individual needs are met by the organizational arrangements, to what extent individuals hold clear or distorted perceptions of organizational structures, and the convergence of individual and organizational goals
Individual-task	To what extent the needs of individuals are met by the tasks, to what extent individuals have skills and abilities to meet task demands
Individual-informal organization	To what extent individual needs are met by the informal organization, to what extent the informal organization makes use of individual resources, consistent with informal goals
Task-organization	Whether the organizational arrangements are adequate to meet the demands of the task, whether organizational arrangements tend to motivate behavior consistent with task demands
Task-informal organization	Whether the informal organization structure facilitates task performance, whether it hinders or promotes meeting the demands of the task
Organization-informal organization	Whether the goals, rewards, and structures of the informal organization are consistent with those of the formal organization

Source: Nadler and Tushman (1980).

degree of congruency with the elements of the environment, that is most *important* to him or her, or congruence with the areas that are most *salient* to a particular criterion that will play the largest role. Although it is extremely difficult to distinguish among these multiple interactions in our research, it is important to attempt to assess their influence.

In sum, organizational behavior research includes many concepts that can be applied to several of the problems in the study of the college environment that were identified in the review of research. These include clarification of the meaning of perceptions, clarity concerning the level of analysis, and recognition of the multiple meanings of *fit*. In addition, organizational theory provides many useful perspectives on the college environment, suggesting reconceptualizations of their structure and functioning.

Conclusion

This review of research on the college environment has discussed a wide variety of concepts and assessment techniques. This variety might be expected. The "environment" can be an elusive concept, since it includes such components as campus mores and traditions; standards of achievement; political atmosphere; physical facilities and architecture; values and priorities; organizational structure; and long-standing issues and controversies (Dressell, 1976). In addition, each of these components affects members of the environment through other people, so that the characteristics of the individual members of the environment help determine its overiding features. For example, a college could have stringent academic standards, but the environment for learning would be very different if these standards were upheld by friendly, supportive faculty or by martinets. Although it is important to analyze the separate components and to distinguish between general characteristics and individual behaviors, it is an even more important and difficult task to analyze the ways in which they interact to form an overall "evironment" (Glick, 1985). A related conceptual problem is whether it is the local or "proximal" environment or subenvironment or the total or "distal" environment or "climate" that is most important (Pace and Baird, 1966; Moran and Volkwein, 1987).

Another issue with far-reaching consequences is whether we conceive of the environment as an individual psychological variable or a group of organizational variables. In addition

to the problems in analysis and statistics that this issue creates, it leads to very different consequences for our research methods. If we consider the environment a psychological issue, we might attempt to examine each individual's ideas about the environment by assessing the person's "construct space," akin to semantic space. We would be less concerned with the "objectivity" of the descriptions of the environment than with the consequences for the individual's behavior. We would examine the individual's coping mechanisms and other psychological reactions to the environment. (Moos, 1979, has proposed something along this line.) We would also turn to environmental psychology for insights and methods (e.g., Holahan, 1986). If we consider the environment as a sociological or social psychological issue, we would concentrate on identifying norms, sanctions, controls for deviancy, patterns of affiliation, power relations, and so on, using the group or the organization as the unit of analysis.

Since the interaction of the individual with his or her environments involves many complexities and subtleties, consideration should be given to qualitative research methods (Jacob, 1987). These methods include cognitive anthropology, symbolic interaction, and ethnography. Ethnography seems particularly appropriate to the analysis of the environment. Originally developed in anthropology, ethnography is today an "extended family" of techniques, but its key focus is on analyzing the cultural patterns of a defined group and on describing the culture as it is seen by participants in the culture (Hammersley and Atkinson, 1983). Therefore, it involves participation, observation, interviewing, and documentation of behaviors and attitudes (Clammer, 1984). Although it has rarely been applied to higher education, ethnography has been profitably used to study medical education (Atkinson, 1981) and such educational units as high schools (e.g., Peshkin, 1978).

The problem is, of course, that the "environment" is where the individual mind, the social group, and the organizational structure meet and interact. And these interactions create many conceptual and statistical difficulties. However, it seems that, in order to understand how colleges educate and influence their students, we will have to deal with these difficulties. The recent research in organizational behavior offers some very helpful insights and techniques. However, the greatest need is for comprehensive theories that will allow us to deal with the complexities of the person-environment interaction in all its richness.

More specifically, my opinion is that future research will be more fruitful if it moves in certain directions. The first is to continue the trend of movement away from analyses of specific measures and toward the identification of the psychological and social *processes* that create the environment. That is, it would be profitable to concentrate on understanding how students are attracted to one another, how informal groups form, how cohesiveness operates, how peers influence one another, how norms are formed and enforced, how people become identified with their group and college, how social judgments are formed, and how the social roles on campuses conflict with or reinforce each other. It would also be very useful to have better ways of identifying the real subgroups on campuses. That is, almost all research involving college subgroups uses nominal groups, such as the residence group, the major field, and student organizations, which may not have any true social interaction and cohesiveness. Research projects that could identify the real norm and peer groups of students would be very valuable. A related advance in research methodology would be technique for assessing students' degree of *involvement* in different groups and methods of assessing their *saliency* in different areas. For example, a student might base his or her ideas of the right number of hours to study on interactions with the members of an informal study group in a math class but might base his or her drinking behavior upon a group of friends in his or her residence hall. Different groups are salient for different behaviors.

A more general issue is that of the general level of involvement in campus life. Many students today experience little of the college. Nationally, 42% of students are enrolled part time. Of freshmen, 40% do not live on campus, and this percentage increases as students progress toward their degrees. As commuting and working students, they come to college only to attend classes or to do required assignments. What is the "environment" for these students? Clearly, our usual conceptions of the environment, which are based on the fully involved stu-

dent, are inadequate for understanding how the college affects such students.

Whatever the topic pursued, researchers should keep the distinctions between *levels* of measurement in mind and should develop measures that are appropriate for the individual psychological environment, the group social-psychological environment, and the global or college culture environment. Likewise, researchers should use statistical methods that properly link data at different levels.

Finally, progress can be made if we recognize that a good deal of research bears on the analysis of the college environment, even if it is concerned with another topic. For example, a recent study of the characteristics of productive research departments included a variety of measure of the environments of graduate programs (Baird, 1986). These kinds of research should be brought into our thinking about the environment. Likewise, I hope this review will encourage researchers working on a variety of topics in higher education to include assessments of environments in their designs.

In summary, this review of the extensive history of research efforts to understand and assess the college environment indicates that the general concept is alive and well and is living in the minds of more than a few researchers.

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