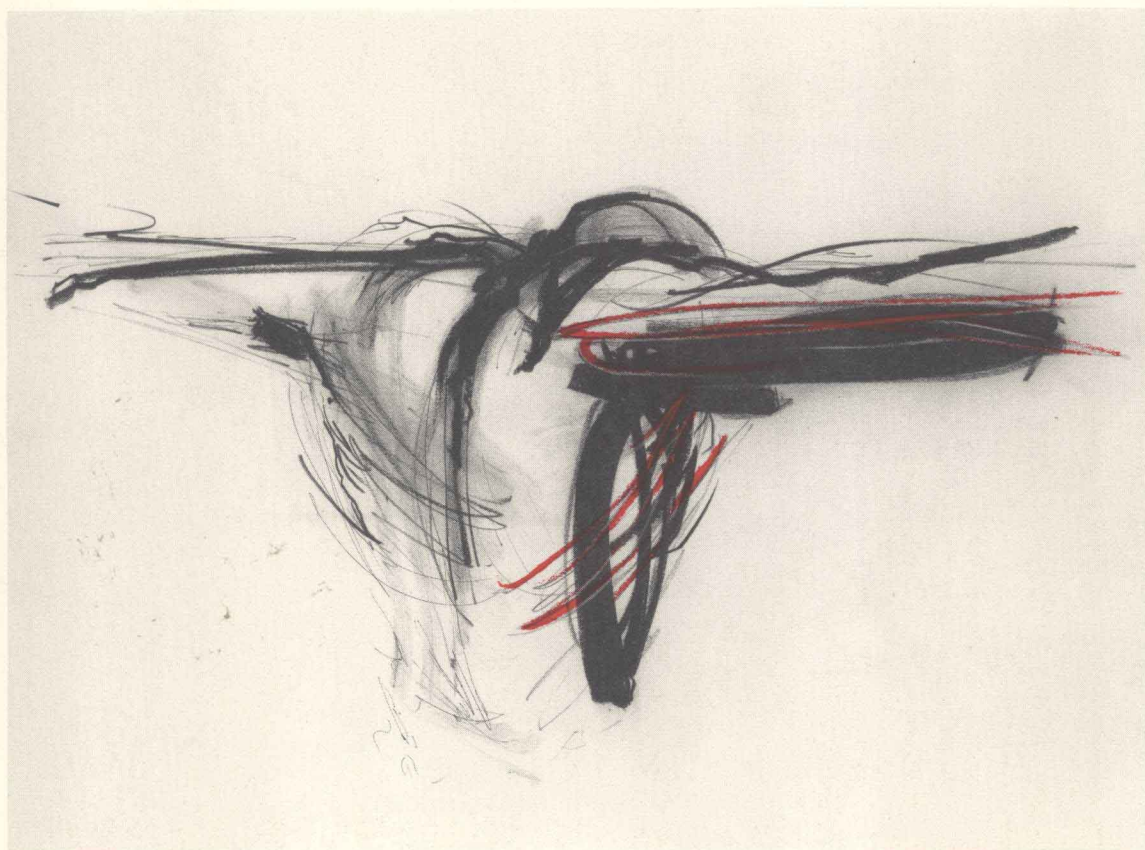


The Journal of **Higher Education**

May/June 1985



JE

The Journal of Higher Education

ROBERT J. SILVERMAN, *Editor*

Editorial Board

HELEN S. ASTIN, *University of California
Los Angeles*

JAMES L. BESS, *New York University*

K. PATRICIA CROSS, *Harvard University*

ZELDA F. GAMSON, *University of Massachusetts
Boston*

WARREN BRYAN MARTIN, *Carnegie Foundation
for the Advancement of Teaching*

OHMER MILTON, *University of Tennessee*

DONALD P. ANDERSON, *Dean, College of Education
Ohio State University, ex officio*

DIETHER H. HAENICKE, *Chairperson, Editorial Board
Ohio State University Press, ex officio*

RUSSELL EDGERTON, *President, American Association
for Higher Education, ex officio*

ROBERT J. SILVERMAN, *Chairperson, ex officio*

Copyright ©1985 by the Ohio State University Press
All Rights Reserved

Journal of Higher Education. (ISSN 0022-1546) Published bimonthly by the Ohio State University Press in affiliation with the American Association for Higher Education. Richard C. Rose, Managing Editor; Kummi Ranjit, Production Editor; Ann Matheson, Assistant Editor; Lisa B. Alwood, Subscriptions Manager. Publishing and advertising offices: Ohio State University Press, 1050 Carmack Road, Columbus, Ohio 43210. Second-class postage paid at Columbus, Ohio, and at additional mailing offices. POSTMASTER: Send address changes to: *Journal of Higher Education*, Ohio State University Press, 1050 Carmack Road, Columbus, Ohio 43210.

Subscriptions. Libraries and other institutions, \$30.00; individuals, \$20.00; members of the American Association for Higher Education, \$14.00; students, \$14.00. Outside U.S. add \$4.50 postage. Orders and remittances should be sent to the Ohio State University Press, 1050 Carmack Road, Columbus, Ohio 43210. Claims on undelivered copies must be made within four months of the date of publication. Allow six weeks for address changes.

Back Issues, Reprints, Microfilms. Most back issues from 1969 to the present are available from the Ohio State University Press. Price per copy \$4.50. Payment must accompany order. Reprints of individual articles, reprints of out-of-print issues, and microfilms of back volumes are available from University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106.

Manuscripts. Articles submitted for publication should meet the requirements set forth in *JHE's* Instructions to Contributors. Original typescript and two duplicates should be sent to: Robert J. Silverman, Editor, *Journal of Higher Education*, Ohio State University Press, 1050 Carmack Road, Columbus, Ohio 43210. Unsolicited manuscripts should be accompanied by a stamped, return-mail envelope.

Abstracts and Indexes. Abstracted in *Abstracts for Social Workers*, *America: History and Life*, *Chemical Abstracts*, *Educational Administration Abstracts*, *Higher Education Abstracts*, *Historical Abstracts*, *Language and Language Behavior Abstracts*, *Psychological Abstracts*, and *Sociology of Education Abstracts*. Indexed in *Bibliographic Index*, *Book Review Index*, *Current Index to Journals in Education*, *Education Index*, and *Universal Reference System*.

Copyright © 1985 by the Ohio State University Press. All rights reserved. Article copying exclusively for personal or internal use, or for the personal use of specific clients, is permitted provided that the copy user or producer pay a fee of \$1.00 per copy of any article, comment, book review, or other complete unit to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970. This limited permission does not extend to other kinds of copying, such as copying for general distribution, for resale, for creating new collective works, or for advertising and promotion purposes. Specific written permission for such copying must be obtained from the Ohio State University Press. Fee code: 0022-1546/85 \$1.00 + 0

The Journal of Higher Education

DANIEL ALPERT

241

Performance and Paralysis: The Organizational Context of the American Research University

The outstanding basic research conducted by leading American universities contrasts with the institutional paralysis that limits their responses to the changing social environment. This article presents a novel matrix model of the organization and mission of American universities and offers a starting point for organizational learning and change.

PATRICIA B. HYER

282

Affirmative Action for Women Faculty: Case Studies of Three Successful Institutions

Case studies were conducted at three universities that significantly changed the status of women faculty during the 1970s. This article discusses the two most frequently cited factors for this success—leadership of top administrators and pressure from women faculty—and other environmental and structural changes supporting affirmative action.

ROBERT B. KOZMA

300

A Grounded Theory of Instructional Innovation in Higher Education

Higher education's unique organization and the optional involvement of department chairs account for the uniformities and the variations of a grounded theory of instructional innovation. Instructional innovation is an evolutionary, personal process; innovations are frequently discontinued but occasionally are adopted collectively and institutionalized. The implications of this process for instructional improvement are discussed.

W. C. WILLIAMS

320

Effective Teaching: Gauging Learning While Teaching

This article proposes a model, based on Craik's levels of cognitive processing, to gauge students' levels of understanding during presentations. Students' responses associated with each level are identified and discussed.

The Financial Impact of Part-Time Enrollments on Two-Year Colleges: A Marginal Cost Perspective

Marginal costs are estimated for part-time and full-time students at public two-year colleges and are compared across several expenditure categories, including instruction and student services. Results indicate that part-time students typically demand fewer institutional resources than conventional full-time-equivalency ratios might suggest.

BOOK REVIEWS

University on Trial: The Case of the University of North Carolina, by Robert A. Dentler, D. Catherine Baltzell, and Daniel J. Sullivan

REVIEWED BY JEAN PREER

354

Approaches to International Education, edited by Earl L. Backman

REVIEWED BY JOHN F. REICHARD

356

Handbook of Student Financial Aid: Programs, Procedures, and Policies, by Robert H. Fenske, Robert P. Huff, and Associates

REVIEWED BY PAUL M. OREHOVEC

359

Handbook of Health Professions Education, edited by Christine H. McGuire, Richard P. Foley, Alan Gorr, Ronald W. Richards, and Associates

REVIEWED BY DON W. WATKINS

360

Copyright © 1985 by the Ohio State University Press

Performance and Paralysis

The Organizational Context of the American Research University

Introduction: Universities in Transition

Organizationally the university is, in fact, one of the most complex structures in modern society; it is also increasingly archaic. It is complex because its formal structure does not describe either actual power or responsibilities; it is archaic because the functions it must perform are not and cannot be discharged through the formal structure provided in its charter.

James A. Perkins [35, p. 3]

[Organizational] learning cannot proceed effectively without maps which can be used to relate errors to features within the organization. Maps . . . are organized pictures which show how the features of the system have been placed in some sort of pattern which illuminates the interdependence among the parts of the system.

Chris Argyris and Donald A. Schön [2, p. 159]

Despite a record of remarkable performance since World War II, American universities have been facing increasingly hard times in the

This article was stimulated by the author's participation in an ongoing series of seminar-workshops on organizational responses to retrenchment, sponsored by the Center for Advanced Study at the University of Illinois at Urbana-Champaign. Resource persons for specific issues in the series included an interesting diversity of administrators, faculty members, legislators, and other stakeholders in the academic enterprise from this campus and elsewhere. The continuing inquiry was carried out by an informal, self-selected network of faculty members from various departments, including Stuart Albert, Richard Boland, Clark Bullard, Fred Coombs, Hugh Petrie, Sue Schneider, James Votruba, and David Whetten, to whom I am indebted for an introduction into the literature of organizational behavior and for many illuminating and provocative discussions.

Daniel Alpert is director of the Center for Advanced Study at the University of Illinois at Urbana-Champaign.

Journal of Higher Education, Vol. 56, No. 3 (May/June 1985)

Copyright © 1985 by the Ohio State University Press

1970s and 1980s. The current period of economic retrenchment has called into sharp focus the question of the nation's commitment to its institutions of higher education and equally serious questions regarding the responsibilities of universities to society. Retrenchment has also revealed within the academy serious problems relating to management and governance, on the one hand, and identity and purpose on the other. The symptoms of trouble include loss of confidence in the future, decline in faculty morale, and a slowdown of the infusion of talented young recruits into graduate study. Paradoxically, these problems have intensified at the same time that corporations declare their entry into the "knowledge business" as a new growth industry, and technological revolutions in computers and telecommunications herald the arrival of the "information age."

In the early 1970s, a study by Lanier and Anderson [28, p. 77] for the American Council on Education found "massive evidence of widespread retrenchment in higher education." Since then, universities have experienced continuing financial restraints but have dealt with each subsequent cutback as a short-term crisis. In 1981, Robert Barak [5, p. 213] observed that "little has changed since 1976. Higher education still desperately needs an ongoing and continuous strategic approach to management." And Herman Neibuhr, Jr. of Temple University concurs: "Retrenchment may be a short range solution to avoid deficits, but it is hardly a strategy to pursue until the year 2000" [33, p. 16]. But the perceived need for long-range strategies is in marked contrast to the short-term, belt-tightening tactics that have dominated academic responses to retrenchment for more than a decade.

Any organization confronting a period of retrenchment is faced with a central dilemma: should it respond by increasing organizational efficiency or should it embark on innovative efforts to improve effectiveness? As these terms are defined by Pfeffer and Salancik [38, p. 11], "organizational efficiency is an *internal* standard of performance. . . . The question whether what is being done should be done is not posed, but only how well it is being done. Efficiency is measured by the ratio of resources utilized to output produced." In contrast, "the effectiveness of an organization is its ability to create acceptable outcomes and actions . . . [it] is an *external* standard of how well an organization is meeting the demands of the various groups and organizations that are concerned with its activities." The efficiency-effectiveness dilemma has been phrased in terms of organizational learning by Argyris and Schön [2, pp. 18–26] as follows: Does the situation call for "single-loop" organizational learning, that is, retaining the existing norms,

goals, and structures and doing better the things we are now doing? Or does it call for “double-loop” learning, that is, reformulating the norms, goals, and structures and embarking in innovative directions to create acceptable outcomes? Petrie and Alpert [37] define the central problem of retrenchment in higher education as the necessity to choose sensibly between these alternatives. Whetten [58] argues persuasively that the single-loop search for greater efficiency has dominated academic responses to retrenchment because of our greater ability to measure efficiency and the difficulty of conclusively settling debates over goals and priorities. Argyris and Schön [2] assert that the tendency to limit organizational learning to single-loop learning is so strong that new organizational maps and new theories that govern organizational actions – what they call “theories-in-use” – are required even to postulate alternative strategies.

Not surprisingly, the difficulties associated with retrenchment have most often been framed in financial terms, and in some ways, this approach to defining the problems makes them simpler to handle: financial problems cannot indefinitely be deferred or ignored, and the language is widely understood. Furthermore, budget shortages do not suggest failures of leadership and do not of themselves call for major modification of internal goals or ways of doing things; if money could somehow be found, the organization could go about its business as usual. In short, financial difficulties are attributable to changes in the external economic environment, an arena in which universities are presumed to have little control. But to many observers (e.g., Boyer and Hechinger [11], Mingle and Associates [31], Richman and Farmer [41]) the cutbacks associated with recent retrenchment are coincident with significant, longer term structural and attitudinal changes in the society, which themselves constitute demands for changes in higher education. In this view, the financial crunch of the past fifteen years is a symptom as well as a problem – a symptom of difficulties that reside not in the financial environment but in the way universities respond. To these thoughtful observers, retrenchment is partly an indication that our universities are not sufficiently adaptive or responsive to the needs of society.

Faced with retrenchment, the dominant tendency within academic institutions has been to deal with each budget reduction as though it were unique to the institution in question, to contend among departments in a zero-sum game for the limited available resources, and to seek to maintain the status quo. In the absence of clear lines of authority or consensus among equals, even a minimal cutback (a few

percent) can reduce a highly regarded campus to a state of sharp confrontation, low morale, and serious discontent. The resulting impasse constitutes what Yarmolinsky calls "institutional paralysis:" "One of the more remarkable things about universities . . . is that, with a few honorable exceptions, they have managed to survive, and even to prosper, without developing any conscious process for making institutional choices" [59, p. 61]. Institutional paralysis is a result, Yarmolinsky argues, of "four major disjunctions within the body politic. . . . no one group in the university has all the factors necessary for institutional change: the concern, the status, the authority, and the equipment to achieve institutional change" [59, p. 61]. In his view, the system of governance is hopelessly inadequate, and he proposes some significant organizational changes. In the opinion of Eric Ashby, another astute observer of the academic scene, institutional paralysis is also attributable to serious differences among academics regarding the purposes of the enterprise. More than a decade ago, he warned that "the gravest single problem facing American higher education is [the] alarming disintegration of consensus about purpose . . . [This grave threat] requires a reevaluation of the relation between universities and American society" [4, p. 104]. To deal with this problem, he proposed an internal "restoration of consensus within the academic community about the rights and responsibilities of universities in society . . ." [4, p. 105].

Despite the cogency of these observations, little attention has been given to these and similar exhortations for change—either in the governance of universities or in the formulation of their purposes. That such powerfully stated concerns have been largely ignored in academic deliberations of the past decade may be a symptom in itself—perhaps a symptom that Yarmolinsky is correct in his assertion that none of the constituencies has the capacity to effect change. Perhaps their admonitions have been disregarded because Yarmolinsky and Ashby did not place the problems in an organizational context that would suggest a workable process for corrective action. In any event, exhortations to the academic community-at-large must necessarily go unheeded if each of the individual constituencies believes they are addressed to someone else.

These circumstances add weight to the need for appropriate organizational models, which are needed in any complex organization to aid in the framing of institutional problems and in identifying the system domain in which they should be addressed. In the case of the university, the problems are obfuscated and made even more intractable

because the formal organizational chart of the university is such a poor representation of reality. Hence, students of academic organizational behavior have for some time found it necessary to develop alternative models as a framework for investigation. Among the models that have been described in the organizational literature are the collegial model, the bureaucratic model, the political model, and the organized anarchy model, each emphasizing different aspects of the university, as suggested metaphorically by their names (for a survey, see Garvin [22] or Richman and Farmer [41]). However, as Garvin points out, most of them share a key drawback: "they focus exclusively on internal decision-making rules and procedures, while paying little attention to the environment in which universities operate" [22, p. 4]. Garvin [22, p. 21] has proposed a utility maximizing model, using an economic approach that pays special attention to the motivation and goals of the key actors. Richman and Farmer [41] describe the university in terms of an open-systems approach [25], which takes into account the external environment. Each of these models has merit and, in many ways, they are complementary. But because they are typically process models, focusing on different actors in the academic community, the relationships among the models is unclear. They provide little insight into the structural relationships within the university and do not clearly define the interdependence among the parts of the overall system.

This article presents a new descriptive model, a matrix model, that was developed in an attempt to portray the organizational structure and practices of the university and to locate organizational problems in a problem-solving space. The motivation for creating a new map arose from an ongoing study of universities' responses to retrenchment (for other reports of this inquiry, see Whetten [57] and Petrie and Alpert [37]) that identified many paradoxes, incongruities, and inconsistencies not only in the rhetoric used to describe the problem issues but in the underlying structures and theories-in-use. The matrix model is intended to portray in concise and visual terms some key features of the organization, mission, and inner workings of the university while also describing its relationships with the external environment. This model is not based on new theories of organizational behavior or on new data relating to the operational characteristics of the institutions. Rather, it is intended to portray and make sense of various features of organizational behavior that have been observed by others; it incorporates or is compatible with many key features of the models mentioned above. The matrix model takes as its reality the modern comprehensive research university as described by such

authorities as Kerr [26], Perkins [35], Jencks and Riesman [24], and Cohen and March [15]. Although it could be modified to include most of the 240 institutions offering the Ph.D., the model is specifically focused on the 100 or so leading universities that confer more than 95 percent of these degrees and are identified as “research universities” in *A Classification of Institutions of Higher Education (Revised Edition 1976)* issued by the Carnegie Foundation for the Advancement of Teaching.

This presentation starts with a simple linear model of the university, as proposed by Alpert [37], and then the matrix model is developed. Initially generated as an organizational map of a given campus, the matrix model has also evolved as a descriptive model of the American university system as an interdependent whole. Next, the matrix model is utilized to provide a context for some major dissonances and incongruities in the academic enterprise that have been highlighted by retrenchment and to suggest directions for organizational learning. Special attention is given to changing expectations and demands and the need for addressing the different and often conflicting purposes of the overall university system. Finally, the need for new maps for the future university is discussed and some observations about settings for creating them are offered.

A Linear Model of the University

It is generally agreed that institutions of higher learning are best understood as collections of fundamentally autonomous units rather than in terms of a central authority, or conception of a whole, to which they are subordinate. Departments were . . . designed to avoid curricular chaos and to shift power from the president to the faculty.

Elizabeth Coleman [16, p. 48]

The idea of a matrix model of the modern research university started with a “linear model” used by Petrie and Alpert [37, p. 107] to describe the university’s structure, its internally perceived mission, and many aspects of its organizational behavior under conditions of budgetary restraint. As shown in Figure 1, the linear model embodies Coleman’s description. It portrays the university as a set of autonomous academic departments and professional schools, each represented by a separate rectangle and tied together by its institutional identity, geographic location, administration, support services, and board of trustees. It is a classic example of a “loosely coupled” organization as described by Weick [56]; in its basic structure, the whole is identical to the sum of its departmental parts.

$$\begin{array}{l}
 \text{Structure} \\
 U = \boxed{d_1} + \boxed{d_2} + \boxed{d_3} + \boxed{d_4} + \boxed{d_5} + \cdots + \boxed{d_n} \\
 \\
 \text{Quality} \\
 Q = \boxed{q_1} + \boxed{q_2} + \boxed{q_3} + \boxed{q_4} + \boxed{q_5} + \cdots + \boxed{q_n} \\
 \\
 \text{Mission} \\
 M = \boxed{m_1} + \boxed{m_2} + \boxed{m_3} + \boxed{m_4} + \boxed{m_5} + \cdots + \boxed{m_n}
 \end{array}$$

FIG. 1. Linear Model of the University

The linear model goes beyond the portrayal of organizational structure; it symbolizes the perceived institutional mission as well. The basic departmental mission is considered to be “the pursuit of excellence,” interpreted by most faculty members and administrators as the successful, self-directed search for new knowledge in the many areas of specialization of the comprehensive research university. The assessment of academic quality is identified with the quality of the research in the various disciplines and professional fields and is carried out through the process of peer group evaluation. The most prevalent measure of departmental quality has come to be its prestige among peer groups, that is, its comparative standing in a national ordering assembled by colleagues in the discipline [12, 18, 43]. For many academics, the improvement of prestige has become the departmental mission itself [22]. Given these perceptions, the mission of the university is seen as the sum of its departmental missions and the quality of the institution is seen as the separately measured quality of its departments. In both structure and mission, therefore, the whole of the university has come to be viewed as the sum of its individual departmental parts. As a result, the proposed responses to external crises are largely restricted to those which can be handled with the available resources, personnel, and motivation of the individual units.

The next section identifies the connections that relate the departments to external stakeholders, giving added insights about institutional behavior. However, even in the absence of a description of the external environment, the linear model serves to portray many of the characteristics of the modern research university, some of which are:

1. The department has become the key unit of academic life; it is virtually autonomous in such important functions as appointments and selection of areas of research emphasis, setting

standards for individual faculty performance, and establishing curricular and degree requirements for students.

2. The decentralized organizational structure and the project system for the support of research are well-suited to the scientific research activities of the university; they have helped to make American academic scientists the world-leaders in almost every discipline.
3. Due to the autonomy of departments and the lack of shared goals, retrenchment has been accompanied by an increase in competition for scarce resources among departments and a resulting loss of faculty morale.
4. The faculty senate has lost status and effectiveness as a factor in campus governance.

The linear model helps to explain the very different organizational responses of the university under conditions of growth and of retrenchment. During the growth period of the 1950s and 1960s, the increasingly decentralized system of governance was highly adaptive. Change took place by enlarging the institution, keeping the old structure intact and adding new academic units under the stimulus of readily available federal research funds and the rapid growth in student enrollments. Academic units were added to accommodate new research activities, developed by outstanding faculty members with entrepreneurial instincts; at the same time, many existing departments also grew substantially. New programs, departments, and institutes were seen as contributors to the prestige of the institution, and there was relatively little opposition to their formation, provided they did not directly compete with existing units. Proposals to add units were often based on the availability of new sources of external funding and did not call on existing units to give up their claims on resources. The period of growth was accompanied by greatly increased responsibilities for the individual professor, especially the successful scientific researcher. Faculty members became entrepreneurs, assuming responsibilities for proposal-writing and project management, recruiting graduate assistants, completing annual reports, consulting in Washington, and sitting on peer review panels—all in addition to previous commitments to teaching undergraduates and guiding graduate students. Given the academic reward system, recognition of research by one's peers in the discipline had a much higher priority than concerns about the internal governance of the campus. In any event, the successful professor felt much too busy to sit through tedious faculty senate meetings on issues

of minor import. Thus, for individual as well as institutional reasons, the system of faculty participation in the governance of the overall university atrophied.

In times of retrenchment, slack is reduced and competition among units increases; maintaining support for one department implies reducing support for others. In the absence of consensus on priorities or of effective mechanisms for making institutional choices, there are few alternatives for the various departments but to dig in and protect their political turf. Thus, the decentralization that was highly adaptive during a period of expansion becomes maladaptive in times of retrenchment. To reduce or eliminate programs in times of retrenchment is far more difficult than to add them in times of growth.

The linear model of the university helps to clarify some of the dilemmas of current university life, providing insights into such issues as:

1. why faculty members define the overall mission of the university solely in terms of their individual departmental missions and consider adaptation to change possible only in the same terms;
2. why proposed changes, budgetary or otherwise, justified in the larger campus interest, are perceived primarily in terms of departmental interests;
3. why the accepted mechanisms for assessing departmental performance severely limit modification of structure or change in institutional priorities;
4. why the expectations of external stakeholders, to whom the university is presented (by the administration) as a single organization with clearly defined institutional structure and goals, are often at odds with the expectations of faculty members.

At the same time, the linear model has inherent limitations. It says little about the relationship of the university to the external environment; the linear model does not illuminate the external mechanisms for the evaluation of internal performance nor does it differentiate between sources of financial support and how these affect the mission and governance of the university. By looking inward to the university campus, the linear model suffers from one of the limitations experienced by the universities themselves; that is, it highlights internal barriers to change without providing insights into external constraints. The next section expands the linear model to include the roles of institutions and actors external to the local campus and their effects on its administration, governance, and mission.

The Matrix Model

To understand the behavior of an organization you must understand the context of that behavior—that is, the ecology of the organization. . . . No organization is completely self-contained or in complete control of the conditions of its own existence.

Jeffrey Pfeffer and Gerald R. Salancik [38, p. 1; 19]

A matrix is constructed by presenting in one diagram the linear models for the n leading universities in the nation ($U_1, U_2, U_3, \dots U_n$). As shown in Figure 2, each linear representation is placed above the other, and the departments at the various universities are aligned one above the other, so that all anthropology departments, for example, are in the same column. Thus any given department, d_{ij} , is located on a row corresponding to a specified university (U_i) and in a column corresponding to a specified discipline (D_j). It is immediately apparent that each department has special relationships with the other departments in its own row, which represents the campus community, and with the other departments in its own column, which represents the disciplinary community. Each of these, the horizontal and the vertical communities, may be viewed as a loosely coupled system, with significantly different forms of coupling in the horizontal and vertical directions. The departments in a given row (campus) share the same institutional name, geographic location, board of trustees, and

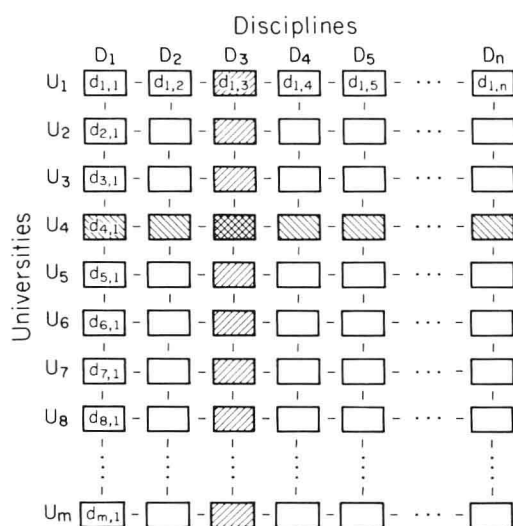


FIG. 2. Matrix Model of the Research University

overall organizational identity, while the departments in a given column are coupled in other significant ways, for example, professional missions, research activities, and reward and recognition systems.

Historically, the increase in the relative influence of the disciplinary communities has been continuous since the turn of the century, as the mission of universities has shifted from the dissemination of known truths to the search for new knowledge [47, 54]. As Perkins has observed, "Before the nineteenth century, a primary rationale for scholarship or research was its impact on teaching. . . . Today teaching and research are missions with distinctive styles and different, often contradictory, requirements for organizational structure. The differences are important" [35, pp. 6–7]. The shift in emphasis from teaching to research as the primary institutional goal was accompanied by a related but different organizational change—a change which Jencks and Riesman [24] refer to as "the academic revolution"—the transfer of authority in academic matters from the president to the faculty. The emergence of the disciplinary communities as the arbiters of institutional life corresponds to the takeover by the professoriate of the dominant role in the governance of the university. This shift was accelerated by the entry of the federal government as a major source of funds allocated directly to individual researchers and handled by their departments. A principal consequence of the enlargement of the federal role was to hasten the decentralization of the individual university; the various departments became more independent of the internal administration and more dependent on the support of external constituencies.

The roles of the campus and disciplinary communities in the life of the typical department can readily be identified with the academic functions that the departmental staff is called on to carry out. Table 1 lists those functions and responsibilities that are primarily associated with one or the other of the two communities. By and large, the horizontal (campus) community addresses itself to the undergraduate teaching mission of the university, whereas the vertical (disciplinary) community addresses itself primarily to graduate education, research, and faculty selection and performance. The campus community was originally shaped and its structure defined by the teaching mission of the university. For alumni, for state legislators, and for many of its friends and benefactors, the teaching mission still represents the principal goal of the university as an educational institution. It is the campus community that relates and is meaningful to undergraduate students, student organizations, and student life. In the university of today, the

TABLE 1
Community Responsibilities and Activities

Campus Community	Disciplinary Community
Undergraduate education	Graduate education and research
Student life	
Shared facilities: library, physical plant	Professional journals, meetings
Faculty appointments	Peer review system
Faculty security: tenure	Faculty mobility
Campus governance	Accreditation boards
Campus administration	Professional societies
Allocation of institutional funds	Allocation of research grants and contracts

disciplinary communities have assumed the central responsibilities not only for graduate and professional education, but also for setting the goals, justifying and selling research agendas to federal sponsors, allocating academic research grants, and implementing the peer review process for the rating of individual and departmental quality. To department heads, the disciplinary community establishes standards for faculty and departmental performance, manages the professional societies and refereed journals, and staffs the advisory panels controlling the dispersal of federal research funding. The sister departments in the disciplinary community constitute the sources of talent for graduate students and faculty recruits. To individual faculty members at comprehensive research universities, the national disciplinary community is typically more meaningful to their professional careers and more familiar in terms of culture and day-to-day contacts than are faculty members in the other departments on their own campus.

If every university in the nation had the same number and identity of departments and professional schools, the representation of all universities in Figure 2 would be the same and the matrix would be completely symmetrical. Obviously, there are differences in the departmental make-up of comprehensive universities; in fact, the number of departments among research universities varies substantially, ranging from about fifty to more than a hundred. In the matrix diagram, the absence of a given department or professional school is indicated by a vacancy in the regular structure; if a given university does not have a department of astronomy or a school of agriculture, these units do not appear on the corresponding row of the matrix. The greatest variance among institutions lies in the number and identity of their professional schools, a factor which makes for differences in campus ambiance and stated mission. But the professional colleges themselves are aligned in national "disciplinary communities" that, like the depart-