

promise of entirely new classifications of kinship terminologies, based on the conceptual variables the terminologies employ and the role these variables play in the structural designs of kinship paradigms. Already it is evident that groupings of kinship terminologies according to these criteria are quite independent of the groupings obtained by the criteria anthropologists have used up to this time. This does not mean that existing typologies of kinship terminology, such as those used by Murdock for comparative study (18), are without value. Different typologies reflect different considerations, and any one of them becomes the appropriate one when the considerations it reflects are the object of inquiry. But established classifications of kinship terminologies have been of little use for phylogenetic study. For example, the several kinship terminologies in a set of phylogenetically related languages (as in the Indo-European or Malayo-Polynesian language families) usually include a variety of Murdock's major types (18). By contrast, such groupings as I have made, based on similarities of gross structural design of kinship paradigms resulting from componential analysis, correspond more closely with linguistic phylogenetic groupings. Nothing is certain yet, but the preliminary indications are encouraging.

References and Notes

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9. C. E. Osgood, G. J. Suci, P. H. Tannenbaum, *The Measurement of Meaning* (Univ. of Illinois Press, Urbana, 1957).
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NEWS AND COMMENT

Michigan: Ruckus over Race Has Relevance to Other Universities

"The government man said that our university was basically for rich white kids. So it is. So are most other institutions in the country."—University of Michigan official.

The academic community is generally regarded as being at the core of the liberal community in the nation. Yet the institutions which employ academicians are rarely subjected to the kind of public examination which would determine whether academic liberalism is

matched by institutional performance. During the past year, the University of Michigan has had the unusual test of undergoing examinations by a federal official of its practices in regard to race and has been labeled as a university for "rich white students." To throw the issue into more vivid relief, the recommendations of the official were made public.

The University of Michigan reacted with sensitivity to the judgment that it was too "white." To some extent, it was

sensitive because it could hardly make a compelling denial of such a description. Out of a student body of about 30,000, university officials estimate that less than 1.5 percent are Negro, that about 1 percent of the faculty members are Negro, and that 10.2 percent of the university's employees are Negro. Most of these Negro employees, however, are listed in the "general service group"; only 2.6 percent of the "officials and managers" and 1.6 percent of the professional personnel are Negro. These figures seem especially striking if one considers that about 10 percent of the people in Michigan are Negro, most of whom live in the nearby Detroit area. University officials, however, respond that only about 5 percent of the population of Ann Arbor is Negro; they also argue that it is difficult to find many Negro students and available Negro faculty members who meet the university's academic standards.

The University of Michigan's public confrontation with its own racial composition began last summer with a study conducted by Walter R. Greene, the Detroit regional officer of the Contract Compliance division of the Department of Defense (DOD). The story is somewhat complicated by the fact that in making the summer study, Greene was not operating for the Department of Defense, but rather was acting for the Department of Health, Education and Welfare (HEW) to scrutinize the university's fulfillment of the provisions of Title VI of the Civil Rights Act of 1964. Title VI provides for compliance with the policy of non-discrimination in federally assisted programs. HEW did not have sufficient staff to carry out such examinations, and Greene was asked to fill the gap.

After making his study, Greene discussed his report and recommendations with university representatives on 4 August. Such reports and recommendations are meant to be private and do not usually reach public attention. In November, however, the enterprising *Michigan Daily*, the university student newspaper, published Greene's 25 recommendations. Perhaps the most striking recommendation, and the one headlined by the *Michigan Daily*, was: "The University is reported both by students and faculty to be known as a large, highly academic university basically for 'rich white students.' The University should develop programs to change this image and to inform the public that all students with basic, average ability, are welcome and can be successful at the University of Michigan." Among the other recommendations were:

- "Each department and division of the university should establish a written policy which is published for all persons related, and periodic self-surveillance should be conducted at each level, to ascertain that discrimination is not being practiced in fact.
- "All the committees and appointed groups which develop University policy . . . should ALWAYS include one or more Negroes as voting and/or advisory members. Merely the presence of Negroes in a body discussing and planning policies will modify the nature of discussion and the ultimate final decisions in almost every situation.
- "The minimal number of Negroes on the university faculty is a detriment to the public image of the University." (The recommendations concluded by

suggesting special recruiting efforts to overcome "the negative racial situation" on the faculties of the Schools of Law and Business Administration and in the College of Engineering.)

In October, Greene conducted another study of the university. The purpose of the review was to determine whether the University of Michigan was complying with the requirements of Executive Order 11246, which provides for nondiscrimination in employment by government contractors. Both industry and universities are subject to such studies. The government department charged with responsibility is the agency which is the largest contractor to the university concerned, which in the case of the University of Michigan, and many other universities, means the Department of Defense. During the past year, Michigan received \$41 million in government funds, \$16 million of which came from the Defense Department.

The important section of Executive Order 11246 is the provision that all contractors must agree that they "will not discriminate against any employee or applicant for employment" and that they "will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin." Following his second study, Greene produced a set of 16 recommendations on employment, which he discussed with university officials. Because of their earlier experience in seeing the governmental recommendations in the press, the university officials took the unusual step of publicly releasing the new recommendations. With this release, the March recommendations seemed to receive more public notice than the earlier suggestions. Conservative publications such as the *Chicago Tribune* gave special attention to publicizing this federal action. In reporting the recommendations, the *Tribune* led page 1 with a banner headline in big block letters which read "RACE EDICT TO U. OF MICH. TOLD TO HIRE MORE NEGRO CAMPUS HELP."

In fact, the 16 recommendations issued by the Detroit Contract Compliance office of the Defense Department were much less sweeping than the earlier ones, partly, no doubt, because they dealt with the limited subject of University employment. On that subject, the recommendations were quite spe-

cific: the office said that the university should search in a more organized fashion for "minority group academic personnel," establish training programs, advertise job vacancies in Negro newspapers, recruit non-white resident directors and advisors for the office of university housing, establish a university office of civil rights immediately, and require each department to submit a "written plan of intended affirmative actions to improve its employment practices" which would be shared with the Department of Defense. One recommendation which was especially resented at the university stated that "a crash program should be established immediately to improve the exceptionally bad employment practices, which currently exist in the College of Engineering. All personnel resources of the University should give temporary assistance to this deficient department."

University Concern

At the university, there was a good deal of consternation about the two sets of recommendations and confusion about what they actually meant. Some at Michigan thought that the university had been "singled out" for study by the Department of Defense, or that it was the first university studied in such a manner. Others wondered whether or not the DOD's pointers were compulsory and whether the University's status as a government contractor was endangered. Others worried about the fact that a university was being treated as just another government contractor and wondered if its academic freedom and right to set qualifications for its faculty might be threatened. Many thought that the preparers of the report did not act on sufficient and detailed knowledge of the university. "If there are to be more reviews of this type, the Department of Defense should get a group which understands universities; this group was woefully ignorant," commented A. Geoffrey Norman, the Vice President for Research.

Michigan's Racial Progress

University officials have lodged no official protest about the Defense Department recommendations and say that they are trying to make progress on racial integration just as they did in the years prior to the governmental reviews. One recent achievement they point to is the creation of two new jobs in the university personnel office: one man will recruit Negro employees; the

other is supposed to see that the grievances of Negro employees get adequate attention. On 17 April, the university issued a special press release stating that the number of Negroes employed during the past year had risen by a higher percentage than had the overall university employment. University officials also point to the continuing "Opportunity Awards" program for students from disadvantaged backgrounds and to the educational exchange program which Michigan carries on with Tuskegee Institute in Alabama.

Defense Department Surprise

In Washington, the Department of Defense has been surprised by the attention given to the Michigan studies. The DOD official responsible, Jack Moskowitz, Deputy Assistant Secretary for Civil Rights and Industrial Relations, said that these studies of universities have been done routinely since 1961. In an interview with *Science*, Moskowitz said that he had never felt it necessary to read a report on a university until the furor over the Michigan case and that he had no idea how many universities the 11 regional Contract Compliance offices had reviewed. Walter Greene said that his Detroit office had done prior studies on Michigan State, Wayne State, and Marquette.

Moskowitz said that "our intention was not to single out Michigan" and did not indicate that he thought Michigan especially deficient in racial integration. "Our job is to see that universities carry forward affirmative programs and are not just sitting back on their laurels," he commented. "When you deal with minority people, you need special efforts to make sure that opportunity exists. If you don't give this special attention, you don't get any progress."

Recommendations Not Compulsory

Moskowitz emphasized that Contract Compliance reviews are concluded with suggestions rather than with mandatory directives. In response to questioning, Moskowitz said that no university has ever been judged so out of spirit with Executive Order 11246 that its defense contract has been canceled. He indicated that flagrant failure to comply with the intent of the order could lead to contract cancellation but that this action had not been necessary so far.

Except in the unusual circumstances which characterized Michigan, a contractor need not fear that a Defense

NEWS IN BRIEF

● NSF DEVELOPMENT GRANTS:

The National Science Foundation recently awarded more than \$25 million in grants under two separate programs designed to improve research and scientific training in institutions of higher learning. More than \$21.8 million went to five universities under the University Science Development Program which is aimed at assisting in growth of new centers of excellence. Receiving the awards were Carnegie Institute of Technology, \$4,339,000; University of Maryland, \$3,703,000; University of North Carolina, \$4,995,000; University of Notre Dame, \$4,766,000; and Vanderbilt University, \$4,053,000. These grants bring the total awarded under the program since it began in May 1965 to \$96,938,000 at 25 institutions. The new grants will finance 3-year development programs. Under the Undergraduate Instructional Scientific Equipment program, 299 institutions shared a total of nearly \$4 million to buy scientific equipment for use in undergraduate instruction. Grantee institutions must match the NSF funds by providing at least 50 percent of the cost of the equipments. Since its inauguration 5 years ago, the program has assisted 979 institutions with grants totaling more than \$37 million.

● PROPOSED AEC REGULATIONS

The Atomic Energy Commission has published new regulations designed to restrict the spread of privately held data that might have military applications. The regulation would apply initially to four specific categories: atomic weapons, gas centrifuge isotope separation, gaseous diffusion isotope separation, and naval nuclear propulsion reactors. Under the proposed rule, no dissemination permits or access authorizations would be issued for the first two categories [The AEC recently ordered all private work on the gas centrifuge process terminated (*Science* 14 April)]. The new regulations establish stringent criteria which must be met by any applicant before permits or authorizations are granted in the latter two categories. Provisions of the regulation appear in the 2 May *Federal Register*. Written comments on these should be submitted to the Secretary, U.S. Atomic Energy Commission, Washington, D.C. 30545, by 17 June.

● "MONKEY LAW" REPEAL:

The Tennessee State Legislature last month repealed the state's ban on teaching evolution in tax-supported schools—42 years after the famous trial of John T. Scopes in that state. The Tennessee repeal leaves only two states—Mississippi and Arkansas—with antievolution laws. In Arkansas, however, a case challenging the law is pending before the state supreme court.

● FOGARTY HEALTH CENTER:

The House has voted to appropriate \$500,000 to plan an International Center for Advanced Study in the Health Sciences as a memorial to the late John E. Fogarty. The center, to be located on the grounds of the National Institutes of Health in Bethesda, Maryland, will cost an estimated \$4 to \$6 million. It will provide facilities and support for visiting scholars at the Institutes, conduct international conferences and seminars, award international fellowships, and assist foreign visitors to NIH.

● FORD, ROCKEFELLER AID NAS:

The Ford and Rockefeller Foundations have contributed \$4 million and \$1 million, respectively, to the endowment fund of the National Academy of Sciences. Academy officials said the funds will be used to support independent preliminary studies and to improve the Academy's services. At present, the Academy's principal source of independent funds is its basic endowment, valued at \$8 million, derived from a 1919 Carnegie Corporation gift. Virtually all of the Academy's current operating budget of slightly more than \$20 million is stipulated for specific services for the federal government.

● WELLESLEY-M.I.T. EXCHANGE:

Wellesley College and the Massachusetts Institute of Technology will begin a 5-year experimental program in 1968, under which their undergraduate students may take courses at either institution. The joint announcement by Ruth M. Adams, Wellesley president, and Howard W. Johnson, M.I.T. president, said the purpose of the program "is to extend the diversity of educational experiences now available to students in the curricula and the environments of both institutions."

Department report on minority-group hiring will be made public. "As a matter of policy, we never wash a contractor's dirty linen in public," Moskowitz said, "We need the goods."

If Michigan is a fair example, it is obviously no disaster if governmental recommendations are published; public airing of the problem may lead to faster action and to the realization that outside advice may be useful. "Generally, we're happy with the report," said university administrator Jack H. Hamilton. "We claim no simon purity. We're not that well acquainted with the problem. Mr. Greene works on it full time." In a telephone interview, Walter Greene, the official who conducted the study of the university, said that he didn't attribute the lapses he found at Michigan to conscious dis-

crimination. "They're a little too moral there to purposefully engage in purposeful discrimination," he commented. Rather, Greene said, he thought the lapses were due "to not paying attention and not thinking about it."

Norman R. Scott, Associate Dean of the College of Engineering, who thinks that his college was unfairly singled out in Greene's recommendations, believes that some good may have come out of the review: "Inevitably, there are those at Michigan who feel they went too far, but this pressure has made it possible for people to do things which they might otherwise have been reluctant to do."

It is apparent that some federal officials would be happier if the University of Michigan, which terms itself the "mother of state universities," would

educate more Michigan Negroes so that they would not feel like academically "motherless" children in their own state. The same kind of judgment might be made about a variety of universities in other states. Having already displayed some desire to move in the direction of a better integrated university, Michigan's leaders now seem ready to push a little harder to achieve the goal.

The Ann Arbor incidents this year are indicative of the changed conditions under which the nation's universities operate. The growing dependence of universities on federal funds gives an added impetus and importance to the type of federal reviews conducted at Michigan. For better or worse, such federal scrutiny of universities will continue.—BRYCE NELSON

Technology: Academy Panel Sees Need For Enhancing Applied Science

European concern over the so-called technology gap suggests, at a minimum, that the United States must be doing something right in the development and employment of its scientific and technological resources. But however golden the American scene may appear when viewed from across the Atlantic, it is a source of much restlessness among those who are closest to it. Over two decades, an unplanned gusher of federal support, inspired mainly by East-West tensions, helped create a huge and productive national research establishment. Now, because of the financial cost of running this establishment, and the enticing hope that science and technology can be as effectively deployed against "civilian" problems as they were against military problems, more and more attention is being turned toward two separate but closely related policy matters. These concern, on the one hand, the growth and quality of the nation's scientific and technical capabilities and, on the other, the institutional arrangements for using these capabilities to make life safer and more comfortable.

The latest manifestation of these dual concerns is a collection of 17 essays, *Applied Science and Techno-*

logical Progress,* issued 25 May by the National Academy of Sciences. Written by a panel of the Academy's Committee on Science and Public Policy (COSPUP), the essays were prepared in response to a series of questions posed by the House Committee on Science and Astronautics, as part of its continuing inquiries into the affairs of science and government.†

Confronted with such issues as the criteria that should be employed for supporting applied research, and how the work should be apportioned among government, university, and industrial laboratories, the panelists produced no surprises. As the House Committee stated in a press release describing the report, "The applied research organization of the future will have to be

flexible, adaptable and quick on its feet. It must be closely tuned, on the one hand, to public need and business reality and, on the other, to the workings and mechanisms of basic research—if it is to be effective, useful and profitable. This is the picture that emerges from a just completed report"

G. Evelyn Hutchinson, the Yale ecologist, gracefully raised the warning that one man's prescription for progress may be another man's death warrant, and that before significant changes are altruistically foisted on the environment, a high level of understanding should be obtained as to their ultimate effects. In general, however, his fellow panelists held to the view that the objectives are clear and the problem at hand is to rev up the applied science establishment so that they can be swiftly reached. Nevertheless, mixed in with the formulas for better flexibility, adaptability, and footwork were some curious new outcroppings of thought that merit notice.

For example, two years ago, COSPUP issued what was the forerunner of the present report, a collection of essays titled *Basic Research and National Goals*. In his contribution to that volume, Harvey Brooks, dean of engineering and physics at Harvard, and now chairman of COSPUP, wrote, "Basic research is recognized as one of the characteristic expressions of the highest aspirations of modern man. It bears much the same relation to contemporary civilization that the great

* Copies of the collection are expected to be available for general distribution toward the end of June; they may be obtained without charge by writing to: Committee on Science and Astronautics, House of Representatives, Rayburn Building, Washington, D.C.

† Members of the panel are: Raymond A. Bauer, Hendrik W. Bode, Harvey Brooks, Arthur M. Bueche, Robert A. Charpie, Preston E. Cloud, Jr., Donald N. Frey, Ralph W. Gerard, Harold Gershinowitz, Jacob Goldman, Sterling B. Hendricks, G. Evelyn Hutchinson, Charles N. Kimball, George B. Kistiakowsky, Vincent E. McKelvey, Cyril Stanley Smith, C. Richard Soderberg, C. Guy Suits, Edward Teller, Maurice B. Visscher, and Alvin M. Weinberg.