Free Universities and National Policy

The government and the higher education community have been brought together to an unprecedented degree.

Harold L. Enarson

The federal government and the colleges and universities play a game. It's called "How to get things done while avoiding issues." In playing the game we are driven to programs and perspectives that approach absurdity. Thus—it is right to lend money to colleges and universities (rich or poor, public or private) for the construction of places to sleep, but it is wrong to lend them money for the construction of places to study; right to make direct lump-sum grants to land-grant universities, but wrong to make the same kind of grants to state universities; right to provide financial assistance to students, but wrong to assist colleges and universities to better educate the same students; right to pay full reimbursement of direct costs in some federal programs, but wrong to do so in other programs; right to provide large sums for medical *research,* but wrong to support medical *education.*

There are other examples, incongruous if not absurd. This controversial topic, the relationship between the federal government and American higher education, is the subject of the two books reviewed here: **The Federal Interest in Higher Education**, by Homer D. Babbidge, Jr., and Robert M. Rosenzweig (McGraw-Hill, New York, 1962. 223 pp. $5.95) and **The Effects of Federal Programs on Higher Education**, edited by Harold Orlans (Brookings Institution, Washington, D.C., 1962. 375 pp. Paper, $2.95; cloth, $5).

In their appraisal, which manages to be both scholarly and refreshingly frank, Babbidge and Rosenzweig take a broad historical and analytical look at the complex interactions between the federal government and institutions of higher learning. A unique contribution of the federal government has been to invoke the national interest in forcing change upon higher education. The Morrill Act establishing the land-grant colleges was one of the earliest of the major innovations that expressed the "federal interest" on a grand scale. It was brought into being because of the "failure of existing institutions to respond to the popular will and wishes." Here is the promise of federal action, for in a hundred years of experience "there has never been a serious charge of federal interference or federal control of these institutions."

The authors demonstrate that, while the "federal interest" is very old it is also, in its present sweep and magnitude, relatively new — and is changing rapidly. As Don K. Price has noted, "the adamant arguments of many scientific leaders of the 1930's against federal support of science now seem as ancient and irrelevant as debates over infra- or supra-lapsarianism; no major university today could carry on its research program without federal money. . . . Harvard, Yale, and Princeton now get a larger proportion of their operating revenues from federal funds than do land-grant colleges like Illinois, Kentucky, and Maryland" [*Science* **136**, 1099 (1962)].

The major thrust is that of science and technology. "The demands of national defense and the exploding progress of science have brought the federal government and the higher education community together in ways and to a degree that would have been unthinkable as little as 20 years ago." And if this has brought funds and opportunities without precedent to our colleges and universities, it has also brought problems without precedent.

Major programs with major impacts have come about rapidly and with consequences only dimly understood. Medical research is, for all practical purposes, largely "federalized." Research and development funds flow in ever larger amounts, from more and more agencies, and lead to the concentration of facilities and talented manpower in a relatively few institutions. By recent count, 15 percent of the total educational expenditures of the nation's institutions of higher education comes from federal sources. New programs appear overnight; in the field of international education alone, no less than 24 federal agencies have programs involving higher education. An estimated 25,000 graduate students (as a good guess, since no records are kept on this basis) are employed on sponsored research projects. The Public Health Service alone lists 1700 scientists (mostly academic) as members of its advisory groups. The scientist has forsaken the quiet of the laboratory for the quiet of the jet plane headed for Washington, or Rome, or New Delhi. And there is no turning of the tide. In a year when the Congress rejected dozens of proposals involving large new commitments to higher education, it also expanded some programs and launched some new ones. Today a bewildering array of opportunities for federal support present themselves to the investigator and the university.

Research Talent: Purveyors and Purchasers

All this is understandable. For, as Babbidge and Rosenzweig point out, the national interest in highly trained manpower and new knowledge can only be met by increased use of the taxing power of the federal government. Rarely has the federal government (or rather the 50 federal agencies concerned with colleges and universities) deliberately set out to strengthen higher education and assist it in fulfilling its basic tasks. The federal agencies, as the authors make clear, are mission-oriented. They buy research talent, and, as prudent buy-

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ers, they go where the talent is—the big, prestigious universities. Uncle Sam is a "blind giant." If, in buying research, he also helps the university, well and good, but this is incidental. Even in the support of students, the "blind giant" is largely indifferent to the effects of its programs on the institutions themselves. Direct financial aid to students simply exacerbates the problems of institutions already bulging with students and desperately short of facilities and teaching staff.

If, in the ritual language of the many presidential commissions that have studied the federal government and higher education, there is "no comprehensive policy," "little coordination of effort," and the like, the fault rests not alone with Washington. As the authors imply, many in the universities like it that way. When the scientific community opted for a national science foundation, it created a new independent power center and thereby magnified the problems of coordination. Yet as late as 1954, the American Council on Education opposed any concentration of general-purpose research funds in any single agency.

As Babbidge and Rosenzweig put it, "Probably no other segment of American society has so many organizations and is yet so unorganized as higher education." More than 100 national educational organizations are represented in Washington. That deep schisms lie beneath the surface harmony was revealed with brutal clarity by the infighting leading to defeat of H.R. 8900 in the 87th Congress. In the closing days of the Congress, a compromise proposal that provided, among other things, grants for capital construction was defeated in part because the National Education Association, clashing headlong with the American Council on Education, lobbied with all its might against grants to both private and public institutions. The NEA charged that the bill "imperils America's traditional concept of separation of church and state." Unless the NEA and the ACE make common cause, higher education will surely continue to be immobilized by internal divisions. On the matter of disunity, the authors speak with wisdom born of first-hand experience (Babbidge was assistant commissioner, U.S. Office of Education, before joining the staff of the American Council on Education. He recently became president of the University of Connecticut. Rosenzweig also served in the Office of Education.) They say, simply: "At some point along the road to maturity and effectiveness, organizations learn the difference between consensus and unanimity, between respect for minority views and immobilization by a minority." Surely this was prophetic advice.

Issues and Men

On the three major roadblocks to general federal support to higher education—the church-state issue, desegregation, and federal control of education—Babbidge and Rosenzweig have much to say, and they say it uncommonly well. "Each of the three is an issue of substance on which honest men can and do have honest differences. At the same time each is to a degree a stalking horse disguising other motives for support or opposition to a measure." Too often these issues camouflage and conceal the real motives of those who do not value education highly or do not want to pay the bill.

With respect to all three issues, the authors express qualified optimism. Their plea, in effect, is for less ideology and more ingenuity. They cite, with apparent approval, Representative Edith Green's argument that distinctions on religious grounds should not be made among *institutions* but rather among the *activities* of each institution. If this be a fiction, it is the kind of fiction needed to neutralize the church-state issue.

Federal funds flow to segregated colleges and universities, and they will probably continue to do so. As the authors remind us, Congress is reluctant to use educational programs to effect desegregation. Many in Congress subscribe to the position of Senator Hubert Humphrey: "As much as I despise segregation, I love education more." Such problems cannot be solved quickly; they must be lived with, some for a long while.

The "federal control" issue is more elusive. The federal agencies have been scrupulous in not dictating what is said in the classroom; in this context the conservative refrain—federal aid means federal control—is silly. The threat is more subtle. It is, the authors argue, "the danger that comes from too much extemporizing; from too great a reliance on stopgaps and crash programs; and in general from too high a regard for immediately visible needs and measurable results and too little concern for the long-term health of the educational system." Or, in the words of one observer whom they quote, "No evidence has been found for the existence of direct controls by the Federal Government. . . . What does exist is an influence over the programs and policies of higher education resulting from the many separate, uncoordinated federal programs in higher education, each of which emphasizes the interests of the federal department or agency sponsoring it rather than the general needs of higher education."

What *are* the net effects of the federal influence on higher learning? This issue was explored in painstaking detail in a pioneering study, which was requested by the U.S. Office of Education and conducted by the Brookings Institution (under the direction of Harold Orland) and which is reported in *The Effects of Federal Programs in Higher Education*. The assignment was to assess (i) the effects of federal programs upon the quality of higher education, particularly at the undergraduate level, (ii) the extent to which fuller use can or should be made of institutions not heavily involved in present federal programs, and (iii) the experience of institutions with the administration of federal programs.

Armed with an impressive battery of questionnaires and interview questions, Orlans focused on 36 institutions: 12 that receive large federal sums, 12 "receiving decidedly smaller sums," and 12 liberal arts colleges (which presumably receive very little).

Awesome statistical detail is juxtaposed with sprightly comment: Table 10 (of 45) tells us that 56 percent of the faculty in group 1 (the big universities) can greet "few or none" of their graduate students by name but that only 2 percent of the faculty in group 3 (the liberal arts colleges) make *this* claim. And, "The staff who teach solely in the undergraduate college of the great universities seem to be mainly young men awaiting advancement, older professors surviving from days when undergraduate teaching was more esteemed, women, foreigners, able but doctorless souls, mediocrities with doctorates, and others, who, for one reason or another, belong to the legion of the academically disenfranchised."

If the obvious is sometimes documented, so is the surprising and the

unexpected. We would expect faculty quality to be improved in the large universities by virtue of federal money. We might not expect that "it is the social sciences and not the sciences which have gained most from the relative decline of enrollment in the humanities." We are not surprised that the best students prefer research assistantships and thus leave the poorer graduate students to handle undergraduate science sections and laboratories. But we may be surprised when we learn that, "Scientists teach fewer classroom hours than humanists at universities, but *more* at colleges; social scientists teach even less than humanists at colleges, and about as little as scientists at universities."

Money, Power, Prestige

What emerges from the mountains of tabulations? Orlans believes that the effects of federal programs have been "profound and beneficial in the sciences, noticeable but more unbalanced in the social sciences, and negligible in the humanities." He insists that, contrary to campus gossip, federal programs "have *not* notably affected the relative proportion or quality of faculty or students going into the sciences," but concedes that they have "concentrated a large number of faculty and many of the best students at a few leading institutions." "Perhaps the most unfortunate consequence of federal science programs," says Orlans, "has been the cleavage they have engendered between the status and rewards of faculty in the sciences and the humanities." The project system is defended as being essentially sound but requiring supplementation by broader forms of support—for example, the NIH institutional grant.

The heavy concentration of federal funds in the charmed circle of the large, favored institutions comes in for little criticism. Such concentration is regarded as largely inevitable and largely good. Orlans does plead, however, for a major effort to strengthen the quality of our leading state universities, pointing out that "In terms of doctorates awarded and graduate students enrolled, it is the great state universities and not the great private institutions which are the bulwark of higher education in the sciences."

In short, the federal government is given a clean bill. Some tinkering is desirable, but no sweeping changes are necessary or desirable, in either the project system or the other rules of the game by which money—and power and prestige—is distributed. True, the colleges and universities must "remain alert to the dangers of control inherent in any form of large scale aid," but the presumption is that they can and will do that. In short, the new federalism works. In the large, the essential freedom of free universities is preserved and their capacity for service in the national interest enhanced. If we look only at the effects of federal funds *within* the institutions, we may with reasonable confidence accept this point of view. Universities with a clear sense of purpose will neither be swayed by the availability of funds nor corrupted by the terms of the bargain. In the words of one observer, whom Babbidge and Rosenzweig cite with approval, "The schools can accept Federal funds and remain free in large part in proportion to the degree to which they have a sound and consistent philosophy and translate this philosophy into actual operating decisions."

However, if we look at the effect of federal programs *between* institutions, there can be no comfort, but only sober concern. The federal dollar is concentrated heavily in a few universities, in effect in those that are the chosen instruments of the various agencies buying research. That those within the charmed circle of excellence use federal funds wisely and well is not at issue. The top 10 or the top 20 are truly "centers of excellence," rightly the envy of aspiring universities everywhere. No populist revolt on the part of the deprived is likely to redistribute the academic wealth by the deliberate breaking-up of empire. However, it is very doubtful whether the continued concentration of vast resources in the top 20 is in the national interest. In one 10-year period (1947–48 to 1957–58), the proportion of federal income of all colleges and universities received by the top 20 institutions rose from 32 to 61 percent and the absolute amount by $270 million, while that received by over 1700 other institutions declined $85 million. As Orlans notes, "During the same ten years, federal funds tripled at Group I universities, declined slightly at Group II universities, and dropped tenfold at Group III colleges." Yet another example: Over half of all federal research and development expenditures has been going to the 20 leading schools—and the top six schools capture one-half of this amount. (The anguished cries of the top 20 about the failure of the federal agencies to allow full reimbursement of cost should be taken with a grain of salt. For these agencies have provided the laboratories, the fantastically expensive research tools, and the sponsored research which enable these institutions to attract the Nobel prize winners and National Academy of Sciences members. With these bright jewels in the institutional crown, the top 20 are advantaged in the competition for good students, private gifts, and prestige. Would these highly favored institutions really have it otherwise?)

The Politics of Education

In my judgment, both books minimize the implications of near-monopoly concentrations of federal funds. Admittedly, some degree of concentration is both essential and desirable. But it would not be a good thing if all winners of the Nobel prize and all members of the National Academy of Sciences were to be concentrated in a single Center of Supreme Excellence. We must face the fact that, while the present concentrations of money and talent are in the interests of the universities so blessed, such concentrations are not in the national interest. This is surely what the President's Science Advisory Committee had in mind when it recommended that "Over the next fifteen years the United States should seek to double the number of universities doing generally excellent work in basic research and graduate education." The federal government will continue to be a giant but it need not be a "blind giant."

What can be done to promote the national interest in higher education, and to do so in a way that promotes the fortunes of the colleges and universities? Can the trend toward heavy concentrations of academic capital be reversed? Can the universities summon the courage to say "no" when confronted with unpalatable loyalty oaths, disclaimer affidavits, and the like? Is the national interest best defined in Washington or on campuses throughout the land? Is the research enterprise choking the teaching enterprise, with possible disastrous consequences? Is the gadgetry of Big Science itself a threat to creativity? These are some

of the questions that inevitably will loom larger as the pace of the federal effort quickens and new programs evolve to meet new national needs.

What is required above all else in facing these problems is for the colleges and universities to understand that, like it or not, they are deeply and irrevocably engaged in the business of politics. In the politics of higher education, there is no place for the amateur and the incompetent. As Homer Babbidge and his colleague note, "Those who believe that the business of making things happen in politics is beneath their dignity or not worth their time are likely to be hurt." Free universities can help shape the public policy in the national interest, but only if they know what they believe and are willing to do battle in the public forum.

Animal Cells and Tissues

Electron Microscopy. A textbook for students of medicine and biology. Gilbert Causey. Williams and Wilkins, Baltimore, Md., 1962. vii + 239 pp. Illus. $9.50.

Gilbert Causey has undertaken the commendable task of preparing a comprehensive, though not complete, description of mammalian animal cells and tissues as they are revealed by electron microscopy. The chapter headings include: "The electron microscope," "Specimen preparation," "The cell," "Bone, muscle, and fascia," "The cardiovascular system and blood," "Skin," "The digestive system," "The respiratory system," "The urogenital system," "The ductless glands," "The nervous system," and "Special senses."

Such a brief textbook with numerous illustrations would fill a void that currently exists in this area, if it were a scholarly effort, carefully produced. In my opinion that goal, unfortunately, has not been achieved. This book, which is intended as a textbook for students of medicine and biology, both undergraduate and postgraduate, is plagued with an insufficient bibliography (a total of 78 references). Approximately 200 author citations appear within the text. Although Causey states in the preface that he has reluctantly left out specific references to each original investigation, he has not cited in the bibliography most of the authors referred to within the text. This is most troublesome, since several author citations are erroneous. The uninitiated undergraduate and postgraduate will really have to scratch if their interest is aroused by particular points raised in the text. In addition, the alternate usage of Palade granule, ribonucleoprotein granule, and ribonucleic acid is bound to be troublesome.

The book has an adequate number of electron micrographs. But in addition to unnecessary duplication (one appears three times), some of the figures are not informative, and many are inadequate. Once again, if the author citations were given in the bibliography, the student would have ready access to numerous electron micrographs, many infinitely more useful than those in the book.

It is only natural that the interpretation of experimental material will encourage controversy and stimulate discussion and research. The student, however inexperienced, should be encouraged (by easy access) to examine the original work, which forms the basis of the textbook writer's interpretation. This is of special importance in the rapidly developing research technique of electron microscopy as applied to cells and tissues.

It is to be hoped that a subsequent edition will be more satisfying than this first effort.

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Advanced Textbook

Atomic Spectra. H. G. Kuhn. Academic Press, New York, 1962. xvi + 436 pp. Illus. Plates. $13.

Kuhn's very good *Atomic Spectra* is the first new English-language book on the subject, suitable for advanced undergraduate or beginning graduate study, to appear in a quarter century, except for the recent, less descriptive but theoretically much more ambitious *Quantum Theory of Atomic Structure* by Slater.

In the earlier books special theoretical background material has usually been developed as needed, but Kuhn has gathered into the second chapter an appropriate brief outline of theoretical methods, upon which he later draws freely, as needed, without breaking continuity. The compilation of quantum mechanical methods is a competent review outline but not an adequate substitute for a more thorough introductory study of quantum mechanics. The remainder of the body of the volume consists of five chapters on simple spectra (136 pages), periodic table and x-ray spectra (27 pages), complex spectra (75 pages), hyperfine structure and isotope shift (59 pages), and width and shape of spectral lines (23 pages). Experimental methods are not considered. Unfortunately the manuscript was finished too soon to derive any material from Edlén's great monograph in the *Handbuch der Physik* series.

Instead of discussing alkali metal atoms immediately after treating hydrogen (the usual sequence), Kuhn considers the light atoms in order, according to atomic number, and succeeds in giving the reader a feeling for the electron core before he describes lithium. The chapter on complex spectra contains an introduction to the Slater integrals and mention of Racah's methods. The omission of more than a brief reference to *f*-electrons can be considered pedagogically as an element of strength, but the lack of a comprehensive table of ground configurations of the elements is a weakness.

In my opinion the best chapter is the one on hyperfine structure and isotope shift, one of the fields in which the author has made significant contributions. An unexcelled compact exposition covers the general features of nuclear magnetic dipole and electric quadrupole interactions in one- and several-electron atoms and the isotopic mass effect and field (called "volume) effect.

The exposition is generally clear, but there is throughout an informality in the introduction of terms that, while it need not disturb the advanced reader, may sometimes confuse the beginning student. Items in point are *core* (pages 11 and 150), *vector model* (page 27), *state* (page 33), *statistical weight* (pages 66 and 118), *resonance line* (page 156), and *center of gravity* (page 170). The subject index is rather sparse.

The volume is well illustrated, with 114 figures as well as four glossy sheets of plates that include fine reproductions of classic spectograms produced by such old masters as Back, Foster, Siegbahn, and Jackson and Kuhn. In comparison, White's text has 263 fig-