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Supercomputer simulation of an astrophysical jet. This density image reveals the basic physical features seen in extragalactic radio sources, including a narrow radio jet, a planar shock at the jet terminus, and an extended turbulent lobe, or cocoon, of gas. See page 522. [Image by M. L. Norman, J. O. Burns, D. A. Clarke, and the National Center for Supercomputing Applications]
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The Foreign Policy of U.S. Universities

The accelerating globalization of technology, industrial practice, and economic markets should stimulate universities to reflect on the international dimensions of education and research. However, universities are busy defending current practices against growing criticism rather than devoting attention to formulating a coherent justification for foreign involvement.

The criticism arises from the tension between the long-term view that the university’s purpose is to produce knowledge and educate people and the newer short-term view that U.S. research universities, largely supported by taxes, can and should be managed to improve U.S. economic competitiveness. It would be convenient if the criticisms could be rejected, but unfortunately, they have some merit.

A number of federal agencies increasingly use competitiveness to justify their research budgets to Congress. If university research programs have potential commercial value, it is natural for a concern to arise about technology transfer to foreign competitors. Therefore, some research sponsors seek formal or informal restrictions—for example, contract funds may not be used to support foreign graduate students or postdoctoral fellows for specific projects. The same research universities that encourage the budget justifications indignantly resist the restrictions that the public budget justification implies.

However, it is not unreasonable to expect that when a university accepts research that is justified by its value for commercial technology, that university must be prepared to agree to certain (but not all) restrictions that the sponsor proposes to specific contracts. The call for restrictions will continue until public claims about the short-run domestic economic value of university-based research become more realistic.

In addition, U.S. research universities are expanding university-industry programs in order to better learn about the process of innovation. Again, the question of foreign participation arises but should be simply resolved. Because the purpose of these cooperative efforts is clear—to improve the performance of U.S. industry—the appropriate test for such participation is whether the foreign firm contributes to the success of the technical program.

It is more difficult to defend university-industry liaison programs that sell access to and patents on taxpayer-supported research to foreign corporations. The typical congressman does not understand why universities should profit from transferring technology created on government grants to U.S. economic competitors.

However, the large number of foreign graduate students and postdoctoral fellows on U.S. campuses presents the most difficult problem. Although both U.S. universities and industry have become dependent on this source of talent, there is growing criticism about this proportion, both from those who believe that the United States is exploiting the intellectual capital of other nations and from those who believe that the United States is being exploited by nations that send their scientists here to learn about basic technology for use at home.

It would be comfortable to reject these two contradictory criticisms and argue that academic freedom demands the admission to U.S. research universities of the best minds, without regard to national origin or future employment location. But the number of foreign students and postdoctoral fellows in many departments is determined more by the demand created by available research funding than by an academic judgment about the desirable level of foreign student presence.

This issue would likely disappear if the proportion of foreigners fell from about 40 to 20 percent (excluding neighboring Canada and Mexico). Such a reduction could have the welcome effect of encouraging the recruitment of U.S. young people, especially those from minority and women, into scientific careers.

It is neither necessary nor likely that the tension between the national and international purposes of the U.S. university will be entirely resolved. The welcome current emphasis on improving the nation’s economic competitiveness has been accompanied by an unhealthy shift toward short-term nationalistic orientation. If the accompanying protectionism is to be avoided, universities must make a coherent case for the long-term benefits of international relationships and alter their policies to respond to legitimate concerns about the U.S. public receives from its support of research universities.—JOHN DEUTCH, Institute Professor, Massachusetts Institute of Technology, Cambridge, MA 02139
French Educational Reform

In his 14 June article "Moving mountains for French research" (News & Comment, p. 1485), Peter Coles writes about some aspects of our policy since 1988 to promote French universities. Understandably, the article focuses on some more controversial aspects of the policy and emphasizes the financing of Parisian universities, CNRS (Centre National de la Recherche Scientifique)-associated laboratories, and the isolated problems that arose in the case of the University of Paris VI. I would like to call attention to some other (and I believe at least as significant) aspects of our policy to better prepare French academia for the opportunities of the new Europe.

The budget for the Direction de la Recherche et des Etudes Doctorales has increased by 20% between 1988 and 1991, reaching 2.4 billion francs ($400 million) salaries excluded and 11 billion francs ($1.8 billion) when they are included, a total budget similar to that of CNRS. We have used the extra money to launch national research and training programs in cognitive sciences, the architecture of computers, computers in biomedical research, research in law, the chemistry of large molecules and of the atmosphere and the hydrosphere, research in education, urban sciences, and the frontiers of physics. We have also injected more money in the 4-year contracts under which the main funding for research and graduate studies of the universities comes. Coles stresses that the Paris universities were the first to get the new contracts (the total increase in funding was +11%) in 1990. But now we are signing contracts with universities outside Paris, and we have given them a +18% increase, that is, we have acted on the well-known problem that the provinces have been under endowed for decades (if not centuries) compared to Paris.

We have also decided to boost the humanities, which have traditionally been underfunded. Their share has risen in 1 year from 16% to 25% of the total, growing budget. We have launched a significant "Young Teams" program under which high-quality new professors get special funding for 4 years to launch their new research programs.

Another part of our program has been to restore morale to the teaching personnel in the form of salary raises and accelerations in careers. One noteworthy aspect has been the creation of a special bonus for those engaged in research and the training of graduate students at a particularly significant level (minimum criteria are one international publication per year and one Ph.D. student having graduated every other year). Five thousand such bonuses have been given in 1990, the average level being 30,000 francs per year ($5000) for 4 years (after which one must compete again).

We have also embarked on an ambitious program of "Ecoles Doctorales," under which we expect to give better structure and visibility and larger scope and international access to graduate schools in our better universities.

The last and possibly most significant part of our policy has been to encourage graduate students to pursue Ph.D.'s and young doctors to become professors. The number of new Ph.D. scholarships has risen from 1900 in 1988 to 3250 this year. It should reach 3700 in 1992; since the scholarships are normally given for 3 years, this means a total of almost 11,000 scholarships (by 1994). In addition, we have created the "Monitorat d'initiation à l'enseignement supérieur," under which 1600 new students each year get an additional scholarship, including training and participation in undergraduate teaching and seminars on how the system works (universities, administration, employment, international topics, and educational aspects). By this September, a total of 4700 "Moniteurs" will have been recruited in the system, each one receiving a total sum of 115,000 francs ($19,000) per year. More than 1500 each year are expected to become maîtres de conférences (assistant professors) after they graduate. And indeed more than 1500 new positions as professor are now being opened each year in the French university system (with absolutely no restriction on the nationality of the candidates).

Finally, we have initiated a system of postdoctoral fellowships under which in 1991 we will have given 100 such fellowships (at 120,000 francs or $20,000 per year) in 1991, essentially to foreign students from Europe, the United States, and Japan coming to France as postdocs. We expect to increase this number to 400 next year and also hope that foreign countries will reciprocate by offering more postdoctoral positions to French graduates.

VINCENT COURTILLOT
Directeur de la Recherche et des Etudes Doctorales,
Ministère de l'Éducation Nationale, de la Jeunesse et des Sports,
61-65 rue Duot, 75015 Paris, France

2 AUGUST 1991
Terms of Endearment

I appreciated Marcia Barinaga’s article (News & Comment, 14 June, p. 1484) about Frances Conley’s struggle against discrimination. My medical school class was fully one-third women, and half of my fellow residents were women, yet there has been a mysterious lack of women supervisors, chairs, and administrators. There are still no tenured women in the department from which I graduated 3 years ago. One has to wonder why.

I also seriously doubt that Stanford Medical School dean David Korn would hire an applicant who called him “dear” or “sweetie” during an interview or on rounds, however he may minimize that action when it is directed toward women. This is just the type of discrimination that has to be addressed.

Cecilia Mikalac
57 Cedar Street, Worcester, MA 01609

Concerning Barinaga’s article about Frances Conley’s resignation from the Stanford Medical School, may I say that, in my unit, I would certainly deny a job to anyone—from a high-school intern to a senior scientist—who exhibited such unprofessional behavior as calling a fellow worker “honey,” who failed to recognize such behavior as disruptive, and who persisted in the practice when asked to stop.

Newell E. Gilmour, Jr.
672 City Park, Columbus, OH 43206

Faculty Retirement

Eliot Marshall (News & Comment, 31 May, p. 1246) reports on the recently released study by the National Research Council (NRC) (1), which suggested that the end of mandatory retirement in 1994, as legislated by Congress in 1986, will not be enough of a problem to deserve any further opposition by academic administrators. One major aspect of faculty demographics not mentioned by Marshall is the ongoing increase in age of faculty resulting from the slowing of its growth in the past decade or two. The NRC report documents an increase in the average age of all faculty, but does not relate this to a change in the number of new faculty or compare the effects of different growth rates with those of delayed retirement.

Data on medical school faculty from the Association of American Medical Colleges’ database (2) show a decrease in their annual growth rate from more than 10% in the 1970s to about 1.5% in the 1980s. The lessened availability of openings for new young medical faculty has resulted in an increasing average faculty age, which can be projected to continue for another 15 years regardless of retirement patterns. Projections from these data that would apply to all of higher education show that growth rates have much more influence on average faculty age and on the number of open positions than would the delayed departures of the small proportion of faculty who are now forced out by mandatory retirement.

Paul J. Friedman
Dean for Academic Affairs, and Department of Radiology,
University of California, San Diego,
La Jolla, CA 92093-0602

REFERENCES

I’m all for abolishing mandatory retirement at age 70, but isn’t it a little unreasonable to expect the average tenured faculty member (figure caption, p. 1246) to work until 2112, when he or she will have reached the ripe old age of 168?

W. Edmund Farrar
Department of Medicine, Infectious Diseases Division,
Medical University of South Carolina,
Charleston, SC 29425-2226

Response: Our caption writer has advanced ideas. In this case, he was out front by a century; the date should have been 2012.—Eds.

Correction

I would like to point out several errors of citation at the end of my article “Cocaine addiction: Psychology and neuropsychology” (29 Mar., p. 1580). In the References and Notes, reference 42 was missing. It should have read, “42. T. Kosten et al., in preparation.” Also in the References and Notes, reference 44 should have been numbered 43.

In the text, citation 43 should have been numbered 41. In figure 3, the attribution was missing. It should have read, “Reprinted with permission from T. Kosten et al. (42).”

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Some Other Books of Interest


Among the early developments important in establishing psychology as a discipline in the United States was the founding of the Psychology Laboratory at the University of Iowa. Associated with the laboratory and other institutional arrangements that succeeded it have been such eminent figures in the field as Carl Seashore, Kurt Lewin, and Kenneth Spence. In the opening chapter of this collection celebrating the laboratory's centennial Howard Kendler traces the intellectual lineages and orientations of these and other principal figures and describes the interplay of ideas and approaches that have gone into "the Iowa tradition" in psychology, which he sums up as representing "the strivings for a mutually beneficial relationship between experimental and applied psychology, a close and intimate bond between research and comprehensive theorizing, and a constant concern with the methodological foundations of psychology." After this introduction ten other Iowa alumni or former faculty further expound matters bearing on the tradition. I. E. Farber discusses the course "History and systems of psychology" taught by Gustav Bergmann at Iowa for over 30 years and Bergmann's assessments of British associationism, Gestalt theory, Freudianism, and various forms of behaviorism. Ernest Hilgard then presents recollections of faculty, students, and facilities up to about 1938, and Leonard Goodstein of the American Psychological Association takes note of roles Iowa faculty and graduates have played in that organization. The remaining papers deal with more specific research areas within psychology. Judson Brown, chairman of the Iowa department from 1965 to 1972, discusses definitional and experimental issues that have emerged in his studies of motivation, and Leonard Eron describes laboratory studies of aggression he conducted there. Research in developmental psychology at Iowa dates back to the establishment of the Iowa Child Welfare Research Station in 1917, and Tracy Kendler gives a "retrospective and prospective view" of that field. Norman Garbney then offers some observations bearing on research in psychopathology; Albert Bandura discusses "the changing icons in personality psychology"; and Abram Amsel studies the history of frustration ("experimental neurosis" in one formulation) as related to stimulus-response theory and learning theory more broadly. In a more broadly focused paper Janet Spence offers some observations on current directions, including organizational issues, in psychology generally, concluding that "the challenge we currently face is to resist the balkanizing tendencies that have come with" the advances that have been made. The book ends with subject and author indexes.—K.L.


In this volume Nathan Reingold, one of the first historians trained to take American science as his research subject, presents a collection of his essays published between 1958 and 1987. After an introduction in which he distinguishes his approach to the subject from the once-conventional "top-only...fixation on great ideas, great scientists, and great revolutionary events" and expresses his avocation for analyzing archival collections as material for "detective stories," Reingold presents a total of 17 essays under five headings. The book is divided into The National Stage including a bicentennial assessment (De Tocqueville to Gerald Ford) and discussion of the professionalization of American science up to about 1900 and the supposed initial "American indifference to basic research." There follow five papers specifically focused on the 19th century, dealing with the Navy Department in the Civil War, activities in Russia of the meteorologist Cleveland Abbe, the influence of Alexander Dallas Bache, a "founder of the American scientific community," and the concerns of Joseph Henry. A further three papers consider institutions—the relations between American graduate schools and their European models and the early days of the Carnegie Institution of Washington, the National Academy of Sciences, and the Rockefeller Institute. The group headed The Perils of Maturity is a miscellany considering refugee mathematicians from Nazi Germany, Vannevar Bush's "new deal for research," and a Hollywood representation of the atomic bomb program. A final trio deals with historiographic issues: the relation of the history of science to the other disciplines—sociology and philosophy—concerned with science, a 1980 indictment of trends in the field by Charles Gillispie (relevant references here being Science 207, 389 and 934), and the formulations of Thomas Kuhn. The essays have not been updated for the collection; rather, the author provides for each an introduction expounding the concerns that motivated him at the time of writing. A 19-page index concludes the volume.—K.L.

Books Received


