

353-0347D
022AMERICAN ASSOCIATION FOR
THE ADVANCEMENT OF SCIENCE

Science serves its readers as a forum for the presentation and discussion of important issues related to the advancement of science, including the presentation of minority or conflicting points of view, rather than by publishing only material on which a consensus has been reached. Accordingly, all articles published in *Science*—including editorials, news and comment, and book reviews—are signed and reflect the individual views of the authors and not official points of view adopted by the AAAS or the institutions with which the authors are affiliated.

Editorial Board
1970

GUSTAF O. ARRHENIUS	RICHARD C. LEWONTIN
FRED R. EGGAN	ALFRED O. C. NIER
HARRY F. HARLOW	FRANK W. PUTNAM
MILTON HARRIS	

1971

THOMAS EISNER	NEAL MILLER
AMITAI ETZIONI	BRUCE MURRAY
EMIL HAURY	JOHN R. PIERCE
DANIEL KOSHLAND, JR.	

Editorial Staff

Editor

PHILIP H. ABELSON

<i>Publisher</i>	<i>Business Manager</i>
WILLIAM BEVAN	HANS NUSSBAUM

Managing Editor: ROBERT V. ORMES*Assistant Editors:* ELLEN E. MURPHY, JOHN E. RINGLE*Assistant to the Editor:* NANCY TEIMOURIAN*News Editor:* DANIEL S. GREENBERG*Foreign Editor:* JOHN WALSH*News and Comment:* LUTHER J. CARTER, PHILIP M. BOFFEY, CONSTANCE HOLDEN, ROBERT J. BAZELL, SCHERRAINE MACK*Research Topics:* ALLEN L. HAMMOND*Book Reviews:* SYLVIA EBERHART, KATHERINE LIVINGSTON, ANN BARKDOLL*Cover Editor:* GRAYCE FINGER*Editorial Assistants:* JOANNE BELK, ISABELLA BOULDIN, ELEANORE BUTZ, CORRINE HARRIS, OLIVER HEATWOLE, ANNE HOLDSWORTH, ELEANOR JOHNSON, MARSHALL KATHAN, MARGARET LLOYD, DANIEL RABOVSKY, PATRICIA ROWE, LEAH RYAN, LOIS SCHMITT, BARBARA SHEFFER, RICHARD SOMMER, YA LI SWIGART, ALICE THEILE, MARIE WEBNER*Membership Recruitment:* LEONARD WRAY; *Subscriptions:* BETT SEEMUND; *Addressing:* THOMAS BAZAN

Advertising Staff

<i>Director</i>	<i>Production Manager</i>
EARL J. SCHERAGO	BONNIE SEMEL

Advertising Sales Manager: RICHARD L. CHARLES

Sales: NEW YORK, N.Y. 10036: Robert S. Bugbee, 11 W. 42 St. (212-PE-6-1858); SCOTCH PLAINS, N.J. 07076: C. Richard Callis, 12 Unami Lane (201-889-4873); MEDFIELD, MASS. 02052: Richard M. Ezequelle, 4 Rolling Lane (617-444-1439); CHICAGO, ILL. 60611: Herbert L. Burklund, Room 2107, 919 N. Michigan Ave. (312-DE-7-4973); BEVERLY HILLS, CALIF. 90211: Winn Nance, 111 N. La Cienega Blvd. (213-657-2772)

EDITORIAL CORRESPONDENCE: 1515 Massachusetts Ave., NW, Washington, D.C. 20005. Phone: 202-387-7171. Cable: Advancesci, Washington. Copies of "Instructions for Contributors" can be obtained from the editorial office. See also page xv, *Science*, 25 September 1970. ADVERTISING CORRESPONDENCE: Room 1740, 11 W. 42 St., New York, N.Y. 10036. Phone: 212-PE-6-1858.

Lessons of the Intellectual Biography of Science

One of those never-ending battles seems to be going somewhat worse these days: all who love the sciences must be dismayed to see an upswing today in largely uninformed attacks that all but drown out the appropriate, corrective criticisms that we shall always need. If this process is allowed to continue unchallenged, one may indeed wonder for how long even the more striking and beneficent advances of science can command a fair and interested hearing beyond the circle of fellow specialists.

In such a situation, it is doubly urgent to celebrate what is worth celebrating. That was one of the motivations for devoting the current fall issue of *Dadalus*, the journal published by the American Academy of Arts and Sciences, to intellectual biographies of some of the men and some of the conceptions that have transformed science during the last few decades. The authors were asked to address themselves to the journal's nearly 60,000 general readers, as informally as they liked, about their own careers or the careers of the current chief ideas in their fields.

As editor of the project, I found in the essays not only information but a number of lessons—none more intriguing than the confirmation of common properties shared by scientific fields despite the obvious differences between them. It was not surprising that even 400 pages could not do justice to the splendid variety of scientific types and concerns, although the areas sampled range from psychoanalysis and sociology to genetics, molecular biology, chemistry, physics, and engineering. Despite this diversity, one is struck by the reappearance of the same themes, which keep coming up in not very different guises: the efficacy of quantification in the treatment of phenomena; the conscious or unconscious search for symmetries; the use of the concept of an evolutionary development as a fundamental tool of thought (as much in psychological and sociological research as in genetics and astrophysics); the contrary pulls of reductionism and holism. There is surely something like a scientific imagination shared by all scientists, which forms one of the bonds among them and which makes possible the interdisciplinary approach that characterizes almost all the developments here described.

Another of the bonds among scientists may be forged by sharing a style of life that starts with their early experiences as students. The personal development of such diverse scientists as Erik Erikson, Talcott Parsons, Francis Crick, Linus Pauling, and R. R. Wilson, among others here presented, shows that a set of ingenious social devices exists to seek out special scientific talent and to bring the acolyte quickly to the most fruitful frontiers of research. In the process the young scientist usually has both the opportunity of training and companionship with a team and also, in the best cases, the opportunity of developing even his most idiosyncratic and iconoclastic ideas.

Such case studies should be helpful antidotes to the current threats of demoralization that, paradoxically, come at a time when the immense dynamism of science has brought it to its highest plateau of achievement. Given sufficient backing, and given bright students who are eager to take part in the intellectual struggle, we can confidently expect the next decades to bring a flowering of scientific progress for which the successes of the past may turn out to have been simply a preparation. —GERALD HOLTON, *Department of Physics, Harvard University, Cambridge, Massachusetts 02138*