private commission chaired by Dael Wolfle, whose distinguished role in the first Commission on Human Resources and as author of its report, *America's Resources of Specialized Talent* (Harper, 1954), assured continuity and authority. (The other members of this commission were Robert D. Calkins, Allan M. Cartter, Henry Chauncey, Kenneth S. Pitzer, Gordon N. Ray, Merriam H. Trytten, John W. Riley, Jr., Richard Schlatter, Elbridge Sibley, Gordon B. Turner, and Frederick T. Wall.) The book is well born.

It contains a wealth of data pertaining to higher education in the United States. The data alone, 177 tables, many from private and federal agencies and hard to come by, are worth the price of the book, although virtually all of them are restricted to simple head counts. Much of the statistical analysis rests on an elaborate set of projections of enrollment and degrees. These projections are derived by methods akin to the population projections of demographers, but they are less dependable because the variables entering into them are subject to even more rapid change than those that determine population growth.

The book also comprehends a wide array of studies pertaining to the levels of ability of students, factors influencing college attendance, college career choices, scientific productivity not predicted by grades, underdeveloped talent among low socioeconomic groups, and the dual careers of women. One of the conclusions that emerges is that there is no discernible lack of innate ability for the high level of skills with which this book is concerned. The task of higher education is to develop this plentiful ability. To do this is costly in terms of public and private expenditures and in terms of the value of the students' own time. Public and private funds and the students' time are scarce resources. Without them, this stock of innate ability cannot be developed. But this book is silent on the critical issue of determining the optimum allocation of scarce resources to higher education and among its many parts.

The book reveals with unusual clarity the long-standing ambiguity of its progenitors with respect to economic analysis. They want "some" economics, but they do not want it from economists. They consult a bit, but shy away from the analytical parts. Toward the end there is an expression of awareness that "economists have shown an increasing interest in the question of the value of investment in . . . training and education" (p. 369), but these economic studies are deemed unrealistic.

The vocabulary of economics abounds in the book. The two most favored words are "supply" and "demand," reflecting the endeavor of the commission to approach the problem from the point of view of society, "represented by such terms as *manpower, supply and demand, shortage, surplus, utilization of supply*, or *adjustment of supply and demand*" (p. xvi), and throughout the book appear such terms as "the market" for college graduates, "market operations," human resource "investment," "cost-benefits," "economic returns," and "input-output model." As used in this book, these words are merely empty boxes, however. There is a large literature in economics (the second edition of Mark Blaug's *Economics of Education: A Selected Annotated Bibliography* [Pergamon, 1970] includes over 1300 items, of which some 500 have been added since the first edition appeared in 1966) from which many of them could have been filled.

Discussions of "supply" and "demand" that rest on the projections of enrollment and degrees are not sufficient for determining the market for the services of these highly skilled people. The actual market for graduates with bachelor's, master's, Ph.D., and professional degrees is very different from the market that this study projected for 1970. Are the estimates for 1975 and 1980 to be taken as more reliable? The answer must be in the negative. As an economic analysis of these markets, the book is a failure.

When I started this review I felt that I might best serve the readers of *Science* by presenting the core of the findings that have been established in economics pertaining to the costs of and returns to higher education and the behavior of the markets for the services of highly educated people. But it turns out to be too big a task to be borne by a review, and such a presentation would not resolve the issue that a reading of the commission's study raises. How much longer will these leaders in higher education avoid economics?

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Toward an International Outlook

Main Trends of Research in the Social and Human Sciences. Part 1, Social Sciences. Unesco, Paris, 1970 (U.S. distributor, Unipub, New York). xlviii, 820 pp., illus. $30.

The contributors to this first volume of Unesco's international study of research trends are a group of distinguished scholars: Piaget (Switzerland), P. Lazarsfeld (United States), W. J. M. MacKenzie (Great Britain), J. Bourgeois-Pichat (France), R. Jakobson (United States), R. Boudon (France), P. de Bie (Belgium), S. Rokkan (Norway), and E. Trist (United States). To each of these authors were made available guidance from a panel of consultants (26 members representing 18 countries); commissioned papers on particular topics from a large pool of specialists; and considerable help from the Unesco Secretariat. Participating in the planning and execution of the study were also all the National Commissions of Unesco and 12 nongovernmental organizations. In addition to inputs from a wide range of intellectual perspectives, advice and criticism were sought from experts on both sides of the Iron Curtain and in the Third World. What we have exemplified here, therefore, is a truly multilateral endeavor.

The first section of the book consists of overviews of sociology, political science, psychology, economics, demography, and linguistics. (Anthropology will appear in a second volume because the manuscript was submitted too late for this one.) In no sense are these intended as systematic surveys based on a detailed investigation of ongoing research. Rather, they provide an outline of central trends in each discipline with respect to the goals and strategies of research and theory, an identification of problems likely to engage the discipline in the future, a charting of existing and needed relationships to other disciplines, and at least a preliminary assessment of the nature of the discipline's involvement in problem-oriented activity. Although the authors relied upon technical advice and papers from many colleagues, the resulting portraits are necessarily those painted by a single individual, reflecting in each case a somewhat different blend of objective reporting and personal

style or interest. The chapter on economics was drafted by the Secretariat owing to the death of O. Lange.

The second section stresses interdisciplinary aspects of social science, with four chapters devoted respectively to: the case for genuine "integration" by means of concerted search for "common mechanisms"; the implications of problem-focused research and its requisite conditions; mathematics as a methodological intersection between disciplines, and a repertoire of the mathematical methods and models especially useful for interdisciplinary inquiry; and the challenges inherent in cross-cultural, cross-societal, and cross-national research and the analysis of certain trends which, taken together, describe one way to internationalize the social sciences. These chapters range broadly, yet are thorough enough to highlight and analyze critical problems and issues, both intellectual and organizational. The final section consists of a single essay on science policy and the development of research organizations and funding patterns in a number of countries; an argument is made for rational public policies to give social research the kind of sustained, orderly support it requires, and a model for an effective, creative organization of problem-oriented capabilities is described.

No collective work of such purpose and of such complexity is invulnerable to criticism. Knowledgeable readers will undoubtedly find errors and omissions. And while the separate contributions are on the whole tightly knit, informative, and often provocative, one might wish for more cross-referencing (the index does not cut fine enough to fulfill this function adequately) and for more explicit stitching together of chapters and sections. For example, S. Friedman's excellent 18-page foreword might have been expanded and incorporated into the main text. However, viewed as a whole the volume is not a hodgepodge, nor is it superficial. Its dedication to interdisciplinary collaboration does not take the form of rhetoric or lip service to a cliché. Appraisals of needs and opportunities are informed and realistic. Clearly, those who brought this project to fruition pretend neither to comprehensiveness nor definitiveness.

What are the chances of substantial movement in the directions suggested by this volume? An answer depends in part on how one assesses the balance of forces working for and against (i) disciplinary divergence or interdisciplinary convergence and (ii) nationalization or internationalization of the social sciences. Although the present period is characterized in part by antirationalism and by loss of faith in the ability of men to solve problems through evidence and reason, the massive social changes we are experiencing may constitute a positive vector. Most critical problems are now global and interdependent. To the extent that mounting problems affect the health and stability of populations, as well as the ability of governments to respond effectively to complex demands, the range of opportunities for the social sciences ought to increase. The public commitment of Unesco to the goal of a global social science which is both objective and directly pertinent to the welfare of mankind, and which will eventually transcend the barriers—intellectual, social, and political—to the acquisition and utilization of reliable knowledge is therefore most timely.

However, the work under review should be regarded as the basis of an agenda for future action and a stimulus for what should become a continuing dialogue by the international community of scholars. For the aspirations, diagnoses, and recommendations set forth here will come to little unless a sustained attack on some very practical problems is carried out. First, improvements in communications are much needed, starting with inventories of working researchers and theorists that reveal their current interests by field or subject. Also needed are catalogs describing in detail large data pools, including how the data are stored, what classification scheme is used, and under what conditions they can be used. "Opportunity maps" identifying contiguous problems intersecting two or more disciplines and missing pieces in the social science jigsaw puzzle which are ripe for exploitation would be useful. Second, the increased mobility of human resources which is so critical to the formation of new configurations of activity and capabilities would seem to rest in part on the establishment of new, sanctioned incentives and new ways of absorbing career risks for those who might be motivated to redirect their talents. Third, codification of past experience with alternative organizational arrangements for producing, disseminating, and utilizing social science knowledge, and a systematic matching of types of intellectual missions and types of organizations, are long overdue. Fourth, the importance of time in the building of interdisciplinary subcultures, in more effective social interventions, and in the development of more adequate theories must be documented more convincingly if resources are to be reallocated. Fifth, if public understanding and support are essential, appropriate educational and political strategies must be devised to close an existing credibility gap and to enable social scientists to function as a legitimate, coherent constituency.

These brief examples simply suggest that if interdisciplinary research is to be enhanced, and if a global social science is to materialize, significant, long-standing situational constraints must be overcome.

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Dating Research

Radiocarbon Variations and Absolute Chronology. Proceedings of the 12th Nobel symposium, Uppsala, Aug. 1969. INGRID U. OLSSON, Ed. Almqvist and Wiksell, Stockholm, and Wiley Interscience, New York, 1971. 658 pp., illus., + loose plates.

Since the symposium of which this book is the proceedings was held the chronology of bristlecone pine tree rings used to calibrate radiocarbon dates has been extended to more than 8000 years. Yet the book gives the reader a good feeling for the trends in dating research, especially because a variety of major topics is covered. These include radiocarbon and archeology, pottery analyses, radiocarbon and varve chronology, radiocarbon and dendrochronology, ice core analyses, exchange rates and radiocarbon in different reservoirs, radiogenic isotopes in the atmosphere and in meteorites, and causes of secular variations in $^{14}C/^{12}C$. Clearly, therefore, the proceedings contain also valuable contributions not directly in the mainstream of radiocarbon dating research but nevertheless closely related.

With respect to radiocarbon dates for historically well-dated Egyptian samples, an analysis more comprehensive than that included in the Nobel volume was presented by the reviewer at a later symposium organized by the Royal Society and the British Acad-