Book Reviews

International Sample Survey

The Use of Time. Daily Activities of Urban and Suburban Populations in Twelve Countries. ALEXANDER SZALAI, Ed. Mouton, The Hague, 1972. xii, 868 pp., illus. Dfl. 120. Publications of the Vienna Centre, No. 5. $48.

This large and complex book records a rare example of international cooperation among teams of social scientists in 12 nations working together toward the goal of comparable large-scale sample surveys on fundamental problems. Multinational surveys of many countries, although few in number, have been made for more than 25 years, but this one crosses frontiers that have never been approached or found passable before. In 1948, under Unesco auspices, comparable surveys were carried out in eight Western European countries and Mexico, but Buchanan and Cantril remarked in reporting on that early work in *How Nations See Each Other*, "We also unofficially approached persons in contact with a Hungarian survey organization and the Czech Institute of Public Opinion, . . . but we did not find it possible to arrange for surveys in either of those countries." By contrast, this survey includes Czechoslovakia, Hungary, Bulgaria, the U.S.S.R., the German Democratic Republic, Poland, and Yugoslavia, as well as Peru and such frequently surveyed countries as the United States, Belgium, West Germany, and France. Since 1948, multinational surveys have escaped the confines of Western culture, including in their universes such remote nations as India, Nigeria, and Turkey, but this seems to be the first time the surveyors have moved back and forth across the Iron Curtain.

Thus as a chronicle of the problems of international research relations and their solutions the work should interest many scientists, and it should be of special interest to social scientists trying to establish what patterns of behavior apply to mankind in general and what patterns are distinctive to particular cultures and social structures.

This project was first proposed by Szalai at the International Social Science Council conference at New Haven in 1963. The choice of topic was crucial in fostering international cooperation. In the past, American survey researchers frequently have acted like exporters seeking markets among foreign scholars for their favorite research problems, sometimes finding no buyers. In this instance, the topic—"time budgets"—was neutral in character and important enough to appeal to researchers from many countries. The trade even flowed in a reverse direction; researchers in Eastern Europe were exporting a classic topic that had remained of abiding interest to them, but that had been neglected in the United States and other Western countries. Understandably, "time budget" has become the accepted term for an exhaustive accounting of some unit of time—in this instance, a day. No matter what the unit—a week, a month in earlier studies—an individual can spend or waste it in various ways.

Socialist countries concerned to plan and manage their resources have provided a setting in which time-budget research has flourished. Inspection of the bibliography in the book is a fascinating exercise for those interested in national styles of scientific work. Such papers as "Man's time as an elementary form of social wealth" and "The leisure time of the scientific workers in the higher education institutes of Sofia" come out of Bulgaria; "The time-budget of the student and the professor" out of Cuba; "Economy of time in research" and "The tendency to underestimate the amount of leisure in subjective estimates" out of Czechoslovakia; and "The rational exploitation of the time-budget" out of the German Democratic Republic. The list of studies done in the Soviet Union is more than twice as long as the list of U.S. studies, and it is relevant to recall that the classic "American" study by Sorokin (1935) properly should be traced back to 1920–21, when, in his words, "The senior author began a similar investigation in Soviet Russia which was terminated by his banishment."

Around 1930, however, there was one peak of such research in the United States. The Bureau of Home Economics of the Department of Agriculture inspired a series of studies, mainly by women scholars, of the time budgets of farm women. The expressed purpose of these studies, mostly omitted from the bibliography of this book, was to ease the labor of those women, which then included making soap and tending fires as well as the usual domestic duties. Apparently comprehensive time-budget research flourishes only under the impetus of governments concerned to plan every aspect of daily life or to ameliorate our daily burdens. Apart from sporadic studies by disinterested scholars, the American research since that time has involved records of special fragments of time—on-the-job time, leisure time, television time—in limited populations of interest to particular commercial groups.

This study is comprehensive and notable both for richness of description and rigor of procedure. About 30,000 "time budgets" were collected in 1965 from samples of urban and suburban populations around one selected city in most of the countries, from a set of cities in France, for the national population in Belgium and Germany, and for the national urban population (excluding very small cities) in the United States. Because fieldwork was concentrated in the fall and subsamples were equally distributed over days of the week, what emerges is a multidimensional description of daily life on an average day (midweek or weekend) during an average season. The response rate was 100 percent in the Russian and Czech surveys; 95 percent or better in the surveys in Yugoslavia, Hungary, and Poland; and between 75 and 90 percent in the other countries. The high overall response rate should allay concern about sampling bias, while the variations that exist provide insight into national differences in cooperation. Various instruments were tested, and the final procedures employed both a diary kept by the respondent and an interview on the following day. Measurement error was thus reduced, and the preliminary

trials and subsequent analyses yielded estimates of the magnitude and locus of whatever errors remained.

Patterns of daily life were recorded in nine major categories further subdivided into 96 specific activities. For example, child care was broken down into help on homework, indoor or outdoor play, talk, travel with children, and so on. Records were kept of the time, place, and duration of every activity. Respondents distinguished between what they did by themselves, what they did with others, and what they did "alone-in-a-crowd." From the total 24-hour budget, the sequence of activities and their frequency of occurrence were also derived. An innovation was the recording of secondary activities occurring simultaneously with the primary activity. Although these data are noted to be subject to considerable ambiguity and error, they deepen our understanding. The reader's response to the large amount of time apparently consumed by television watching in America may be modified when he discovers that child care is occurring simultaneously as a secondary activity. Surely, however, we get a truer picture of the total time spent with television when we sum all such viewing, primary and secondary.

A detailed profile of each respondent was obtained. In addition to the usual features—sex, age, occupation, marital status, number and age of children—availability of facilities like household help, inside plumbing, a telephone, a car or motor scooter was determined. The use of time could thus be related to global features of modern urban life, to features peculiar to given communities and nations (culture, ecology, technology, social organization, demography), to features common to given types of individuals (elderly persons, housewives), or to features dependent on an individual's facilities. Possibilities for analysis seem endless; the very elaborate findings presented in this volume hardly begin to exhaust the potentialities of the data.

The specialized computer programs developed for coding and tabulating the information efficiently and with minimum loss of detail and for testing various models or theories of time use are themselves a major accomplishment and a resource for the future. A statistical appendix of over 300 pages provides tabulations for all countries and breakdowns by many individual characteristics. Using these tables, other scholars can conduct their own secondary analyses, examining special problems of interest to them but ignored or treated only incidentally by the original investigators. A data bank containing the original records plus cards and tapes, open to other scholars, permits still deeper secondary analyses.

So many fine primary analyses are presented in the book that it would be impossible to summarize them in a review. Among other important findings, the analysts note that "the plight of the employed woman pervades all of our time-budget records." When both paid work and housework and family obligations are summed, "the working woman is much busier than either her male colleagues or her housewife counterpart. After her day's obligations are done, she finds herself with an hour or two less time than anyone else, and this pattern again appears 'universally' at all of our survey sites." The universality of the problem across such diverse societies suggests how difficult it is to reduce the burdens of this dual role. Despite wide variations across sites in modern conveniences and laborsaving devices, time spent on household work remains relatively constant. The weak correlation between housework time and housework technology suggests that easy solutions to the problems of the working housewife will not be provided by technological change.

Patterns of child care show considerable national and individual variation. "Two marked curiosities of the United States data" are "how little time is spent helping children with homework and how much time is spent transporting them." The child-rearing pattern of the French, in its temporal aspects and in terms of the division of labor between the sexes, is found to be unique. French housewives spend more time caring for young children and minister to them more times a day than anyone else studied. The French also spend the most time on eating, averaging 106 minutes a day. They are, however, most unusual in that they often watch television while they are eating, a finding which may outrage readers devoted to the haute cuisine.

In contrast to eating, sleep shows "extremely limited . . . variation . . . across . . . country sites as well as across the more general social categories of sex, occupation, and the like." When country sites are treated as units and intercorrelations between different types of activities are computed at the aggregate level, however, "there is an extremely marked tendency for longer sleeping times to turn up at the sites where most time is spent eating." The correlation coefficient of .92 leads the analysts to postulate an "eat-sleep culture" with France as its primary example.

Although both culture and position in the social structure were found to be important variables, "occupants of the same basic social roles (defined by sex and employment status) in the most disparate of our national sites dispose of their time in ways which are more similar to one another than they are to the other basic roles within their own cultural settings." Variations in technology have surprisingly little effect on time budgets, although the fineness of everyone's budgeting—indeed the precision of the research itself—is dependent on the mass-produced watch and clock. (Many of the respondents lacked plumbing, telephones, and television sets, but everywhere, except in the Peruvian site, 99 percent or more had a clock or a watch that permitted them to regulate their lives and record these data.) As noted above, laborsaving technology within the household is not much of a time-saver. Commuting technology also varied widely across sites—walking is the most common means of commuting in the Soviet Union while the automobile is exceedingly common in the American sample—yet commuting time varied little. There is "a distinct preference toward using increased efficiency of transport to spread out in space."

Whether daily life is spent in social or solitary fashion is of special interest to sociologists and social critics. Different societies and different social roles showed great variation in the proportion of waking time spent alone. Unmarried and unemployed women spend about twice as much time alone as others do in every society except the United States. In our country, however, judging by the data, everyone is alone a great deal of his or her waking time, employed individuals, married or unmarried, reporting that they spend between 6 and 7 hours alone. The detailed analysis suggests that part of the explanation lies "in the organization of work . . . in Eastern European countries [where] employed people are generally together with other colleagues and work in the same room, even if they belong in the upper white collar group." But the locus of the pattern is not just at work. Among American and European employed, married people with children—who should have

approximately equal opportunity for social contact—the ratio of free time spent alone to that spent with family members is highest in the United States, although the ratio is of similar magnitude in a few other sites.

These examples can only suggest the book's potential for filling our hours and days instructively. It is a rich data bank for us to rob in our free time.

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High Energy Astrophysics

Gamma-Ray Astrophysics. Proceedings of a symposium, Greenbelt, Md., Apr. 1973. FLOYD W. STECKER and JACOB I. TROMBKA, Eds. National Aeronautics and Space Administration, Washington, D.C., 1973 (available from the Superintendent of Documents, Washington, D.C.). xvi, 413 pp., illus. Paper, $2.90. NASA SP-339.

Three years ago I participated in an international symposium on interstellar dust. When the proceedings finally were published, after more than two years, the price was $40 for the paperback edition and more than $50 for the hard-cover version. I was dismayed that the International Astronomical Union would tolerate such a price structure. It makes such volumes inaccessible to individual researchers; but, worse, I imagine that many libraries in developing countries will simply not be able to afford such prices. What was billed as an international symposium will turn out to be a symposium whose proceedings are available only to affluent individuals and affluent countries.

In view of all this, I am pleased not only that the editors of the symposium on gamma-ray astrophysics have been able to bring out the proceedings within a year of the meetings but also that the price is only $2.90.

The symposium deals with both theoretical and observational investigations. Clear attention is paid to the relationship between gamma-ray and x-ray astronomical results. Some of the findings obtained in the series of Apollo missions, between 0.3 and 27 Mev, are presented by L. E. Peterson and J. I. Trombka; and preliminary results on SAS-2 observations at energies above 30 Mev are given by D. A. Kniffen, C. E. Fichtel, and R. C. Hartman.

Shortly after the end of the symposium, the existence of occasional gamma-ray bursts was discovered by a group of Los Alamos scientists. The editors therefore have added two papers on this topic. Unfortunately, however, this opportunity was afforded only to contributors from the editors' own institution—the Goddard Space Flight Center—and only papers that had already appeared in *Astrophysical Journal Letters* and in *Nature* are included.

Rather more interesting from a historical point of view are comments in D. D. Clayton's article on prospects for gamma-ray astronomy and comments by E. Schatzman and C. Fichtel during a final session entitled Future Directions in Gamma-Ray Astronomy. Schatzman and Fichtel both worry about the detection of very short gamma-ray flashes expected from supernovas, and Clayton worries about the spectrum of gamma rays emitted in supernovas. While the subsequently discovered gamma-ray bursts may have no relation to supernovas, it is nevertheless pleasing that some theorists may have come so tantalizingly close to predicting the bursts.

This book is a great buy for anyone with even a small interest in high energy astrophysics.

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Current Algebra

Currents in Hadron Physics. V. DE ALFARO, S. FUBINI, G. FURLAN, and C. ROSSETTI. North-Holland, Amsterdam, and Elsevier, New York, 1973. xxvi, 874 pp., illus. $97.50.

There is essentially only one thing seriously wrong with this book: its price. In this it is a milestone of sorts in the history of physics; the next most expensive physics textbook that I know of sells for less than half as much. One should not necessarily criticize the publisher; North-Holland has been of exemplary service to the physics community and the book is superbly produced in a time of rapidly rising costs. But when a book is as expensive as this one an explanation is called for.

The book is wonderful for anybody wanting to learn about what happened in high energy physics between late 1965 and late 1970. The authors are members of the team who wrote many of the pioneering papers that brought about current algebra in the first place. It is always a treat to have a text written by people who helped in creating the material; it may be likened to an encore by a prima donna.

The book is primarily about current algebra in the loose sense of the term. After a reasonably thorough review of the roles of hadronic currents in the nonstrong interactions, it goes on to discuss low energy theorems, chiral symmetry, sum rules, and superconvergence relations. This is followed by three chapters dealing in agonizing detail with the method of obtaining sum rules by saturating commutators. It is certainly valuable to have all this methodology assembled in one place and presented clearly, but I think the discussion is so technical that it will be of interest only to people on the verge of going out themselves and doing a bit of saturating. What I really like about this book are two chapters supposedly peripheral to the main subject. These are an introductory chapter reviewing strong interactions and a chapter near the end discussing the dual resonance model. They contain probably the best presentation anywhere of two subjects often notoriously ill-explained. The discussion here is concise, touched with a certain elegance and always maintaining the proper emphasis, and may be read with delight and profit by anyone wanting an overview before plunging into the literature. Also, the book is graced by a comprehensive bibliography.

The book suffers because it was unable to make up its mind on what it wanted to be. It started out as a textbook and ended up like a summer school volume. The latter part consists of a hodgepodge of developments, only some of which have subsequently become important. The authors originally planned their manuscript to cover events up to the end of 1970. They mounted a valiant effort to make the book more up to date by including some material from 1971. Alas, the effort is in vain; it's now 1974. We are older and a bit wiser, and know that while certain subjects call for a more detailed treatment other material may be better off enshrined in the journals. The book could have maintained its style by leaving out this last part altogether and thereby cutting down on its bulk, which is considerable. Incidentally, a book of this size might be more conveniently published in two volumes, much in the manner of a well-known field theory text. In any