

few people accessible to the rare appropriate educative environment and hope that the products of such education will be at the right place at the right time to make the right difference in the actions that affect our society for better or worse" (p. 118). Objectivity in teaching is not enough; future teachers must stop being "passive, neutral persons" and fuse into their teaching certain specified forms of exhibitionist activism, of which Michael's subsequent small catalog of examples is confined to the following: "unionizing activities," "protesting Vietnam," "scuba-diving," "yoga," "LSD," and "new theologies." The rationale for this selection is that since "way out" activities will be a "critically important part" of tomorrow's world, students should get an early whiff of them from exemplary adults—an amazing reversal of current procedures. Whether such forms of teaching should be confined to Michael's elite is by no means clear, but he does make a couple of remarks about the difficulty of legitimating his specially trained Platonic kings to run all the rest of us: "The world," he says, "would have had . . . to concur" in this elitist decision; and in any event, "what the consequences would be for the larger portion of the society . . . I am not prepared to explore here" (p. 124). "At the very least, we must share our struggle with the young. . . . If they don't learn, or aren't allowed to learn, I don't think there will be a way out" (p. 125, concluding remark of the book). Whether yoga, LSD, and new theologies will assist the Civil Aeronautics Administration to deal with huge (and "inevitable") air crashes, or the Indian government with gigantic (and "inevitable") famines remains to be seen. But possibly such regulatory activities would prove too mundane for Michael's philosopher-kings, and would devolve upon less interesting, humble folk.

Boulding may not instruct in yoga, but he has more thoughtful things to say on future tendencies of social organization. He perceives social-organizational tendencies in an evolutionary, not apocalyptic, perspective—a perspective in his view which transcends or encapsulates other systemic possibilities, such as mechanical-repetitive and equilibrium frames. As he says, "In the evolutionary process time's arrow points 'up,' towards the development of ever more complex and improbable forms. . . . The nature of that complexity, however, . . . cannot be known in advance, at least by an organism with a merely human capacity

for knowing things" (p. 162). There are risks in trend projections—the folly of linear curve extrapolations; the possibilities of systemic "breaks"; the intrusion of unheard-of technological discoveries or organizational theories—yet some guesses are better than others (as, for example, his guess that the absorption of America's farm population into other callings has about run its course, and that shifts out of America's industrial labor force in the next 15 years will not be very spectacular). The development of complex control systems—electronics, automation, cybernation—does not fill him with horror: "That the ultimate results of this development will be benign can hardly be doubted except by . . . extreme pessimists who regard . . . any extension of man's power as a mere increase in the opportunity to do evil" (p. 170).

Boulding is concerned, as Michael is, with what he calls the "milk and cream" problem—that is, a possible separation within and among nations between those people who "adapt through education to the world of modern technology" and those who don't make it—a phenomenon which on a world scale is far darker than it is inside the United States: "Such a situation [of cleavage] could hardly persist without corrupting the cultures of both the rich and the poor" (p. 171).

Social inventions, similar to such previous ones as banking, insurance, the corporation, and "the socialist state," will be necessary—only they will require more rapid development than in the past. "Maybe," he says, "a social invention is needed here in the shape of an educational subsystem which will give the culture of the poor a status of its own." Perhaps a society such as America could afford to abandon its egalitarian, homogenizing pretenses, and "invent" a mosaic society of many small subcultures. Perhaps we should be less critical of "frills," as opposed to skills, in our educational system (p. 173). Whether such proposals are wise (and this reviewer has grave, if poorly thought out, reservations about them), in point of fact many Americans are already taking them extremely seriously. Their implications need to be carefully, rather than impetuously and passionately, explored—if in fact such a separation of reason and emotion is possible any longer.

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Sociometrics

Stochastic Models for Social Processes. DAVID J. BARTHOLOMEW. Wiley, New York, 1967. xii + 275 pp., illus. \$9.50.

The notion that behavior is best regarded as a stochastic process, that is, as a temporal sequence of events that can be analyzed by the theory of probability, has led to the increasing use of a probabilistic rather than a deterministic framework in the mathematics applied to the social sciences. A firm foundation for the construction of stochastic models for sociological problems was laid by J. S. Coleman, a sociologist, in *Introduction to Mathematical Sociology* (1964). In his preface Coleman expressed the hope that his book would be quickly followed by such systematic growth in the area of mathematics for social processes as to cause the book to be rapidly outmoded. His hope concerning the growth of the field is being realized. In *Stochastic Models for Social Processes*, D. J. Bartholomew, a statistician, has made a timely and important contribution. Compared to Coleman's book the subject matter treated by Bartholomew is somewhat limited, in that essentially only internal structural changes in graded social systems and changes in the input, output, and total size of such systems are considered; but this restriction has allowed the author to study in much more depth questions specific to these systems.

Underlying the construction of stochastic models is the notion that the members of a graded system are at any given time in one of a set of possible "states," which may either be discrete or form a continuum. The main object of the mathematical analysis is to find the complete distribution theory of the random variables of interest. The selection of the dependent variables is not completely arbitrary; it reflects the interests, history, and particular methodological problems of different disciplines. Thus mathematical psychologists have argued that the dependent variable in psychology is, or should be, response probability, while mathematical sociologists have typically used the number of people in each state as their main dependent variable. Throughout the book the object of the analysis is to find the expectations for the numbers in each state at any given time. Variances of these numbers, which are typically more difficult to get, are found for only a few Markov chain models.

The models may be dichotomized as open or closed. The total size of a closed system does not change over time. This means either that persons neither leave nor enter the system or that any losses are replaced immediately by identical recruits. An open system, on the other hand, may have both losses and gains. The models may also be classified according to whether time is treated as discrete or continuous. A third mode of classification depends on whether or not the models possess the Markov property, which essentially means that prediction is not changed by information about the history of the process. Plausibility of the assumptions and tractability of the mathematical analysis together dictate whether the social system under investigation is assumed to be closed or open and how time and history of the process are treated. Finally, the models may be dichotomized according to whether or not the grade sizes are assumed to be large and whether or not the limiting behavior of the system is investigated. Models with large grade sizes or a limiting behavior of the system would seem to have a limited practical usefulness, since the number of members in social systems is often relatively small and an equilibrium state is approached by such systems very slowly. Such models may, however, serve as reasonable approximations to the exact solutions.

Some of the discrete and continuous time models for open systems, in which recruitment and loss appear explicitly, are characterized by transitions between grades according to a time homogeneous Markov chain, constant loss probabilities, and a number of recruits which either is fixed or is a realization of a known stochastic process. Other models, some of which are original with the author, are based on the more realistic assumption that either the total size of the system or the grade sizes rather than the number of recruits is fixed. An excellent survey of models for diffusion of information in closed systems is undertaken in the last chapter. The models presuppose that information is spread by means of chance contacts between members of a given population. They differ from one another in the assumptions made about the likelihood of communication, the length of time the "spreaders" are active, and the variables affecting the cessation of the spreading.

In addition to prediction and understanding of the phenomena in question,

the design of social systems and their mode of operation is explicitly recognized by the author as one of the main functions of mathematical models. Indeed, some of the models for hierarchical organizations were especially built to establish principles for the design of recruitment and promotion policies. Thus the result of several models in chapter 5, for example, is that the effect of making promotion rates an increasing function of seniority is to increase the relative sizes of the lower groups at the expense of the higher. And a conclusion reached in chapter 7 is that equal promotion opportunities and a pyramidal structure of a social system are incompatible in practice. Social scientists concerned with equal opportunities and individual freedom may find the notion that mathematics may lead to the manipulation of social systems highly intriguing.

The book is written for social scientists, but only those few who are sufficiently trained in Markov processes, the Laplace transform, and renewal theory will be able to read it. Since this is a mathematically sophisticated book and the ratio of formulas to text is rather high, even they will be required to follow the presentation carefully and to supplement many derivations by intermediate steps. The effort should be highly rewarding.

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Young Drug Users

Drugs on the College Campus. HELEN H. NOWLIS. Anchor (Doubleday), Garden City, N.Y., 1969. v + 144 pp. Paper, 95¢.

This book is the result of a project to educate college administrators about the use of drugs by students. When the project was organized—with the author as director, at the suggestion of the National Association of Student Personnel Administrators, under a contract from the Food and Drug Administration and with the cooperation of the National Institute of Mental Health and the Treasury Department—some hope existed that a factual handbook could be compiled to guide policy-making about students' use of drugs. That hope, or rather delusion, no longer exists. Although this brief book provides a penetrating and sharply focused account of campus drug problems, it is not a recipe for solving them.

Nowlis' approach is descriptive. She says of her goals in writing this book, "Above all I have tried to follow the rules of evidence." She has succeeded unusually well in carrying out those intentions, so rare in books about the student drug scene. The result is a rather complicated picture of student drug use as a manifestation of underlying social psychological problems of student life. These problems challenge almost every aspect of our culture.

The college drug scene is described in its context. It is a context of ignorance, passion, semantic confusion, and disputes about methods of inquiry and the validity of their results; it includes the increasing development of a "pill society," the "generation gap," and evidence that "tolerance of complexity is not one of the outstanding characteristics of the human species. . . ." It is a context of inconsistent and contradictory actions, laws, mores, and cultural values. Historically, it is a context of failure in policy-making, of inadequate commitment of resources, and of scientific inquiry of often poor quality. It is not a pleasant context to read or think about.

This account does not reinforce naive hopes that understanding how and why students use drugs will help very much. Understanding "what's happening," both physiologically and psychologically, can intensify conflicts about what we should do, as well as alleviate them. Social policy-making is a function of information, but also of the conservatism, tolerance, courage, and resources of policy-makers. Nowlis' view that policy on student drug use should be examined in the light of broad social issues, for example, was highly controversial only a short time ago. Until recently, conservative, intolerant, cautious, and parochial scientists and policy-makers usually succeeded in confining the consideration of drug problems to a strictly medical and legal sphere. This confinement hampered research; and it furthered the development and profitability of organized crime and other extensions of drug problems. Whether the policy consequences of social psychological conceptions of drug problems will be happier than those that followed from the medico-legal approach to them is at present a matter of sharp dispute. And, unfortunately, only time will tell.

Student drug use is not only a larger problem than in the past but an almost unploughed field for social scientific investigation. For the most part, of course, this book or any book on this