and Belief, is the most variable in quality. I single out two chapters to illustrate this.

The chapter by Richard Katz, "Education for transcendence," deals with altered states of consciousness induced in an important form of San healing dance. This chapter raises old but still serious questions of what constitutes data in the natural history approach that cultural anthropology depends on. Katz writes in an idiom appropriate to a devotee. It is impossible to distinguish the views of the San from the views of the observer. No line is drawn between observation and ideology. The chapter is a display, rendered excellent by exaggeration, of the problems of maintaining objectivity in anthropological reporting.

The chapter by Nicolas Blurton Jones and Melvin Konner, "!Kung knowledge of animal behavior," is objective and enlightening. The authors demonstrate not only the existence of a wealth of knowledge of animal behavior among the San but, more important, that San hunters use the same methods in evaluating data and in formulating and testing hypotheses that scientists use. The only 19th-century evolutionist impressed by such thought processes in "primitives" was Alfred Russel Wallace. And although all anthropologists of this century have subscribed to the intellective equality of different peoples few have bothered to give such satisfying evidence. This is a study to be emulated.

General descriptions of San (Bushman) culture and social organization are to be found in other publications, such as those of Lorna Marshall. But this book is a unique store of data on hunter-gatherers. As such it will be of value to anthropologists and to social scientists of many disciplines.

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Measuring the Effects of Education

Schooling and Achievement in American Society. Papers from seminars, Oct. 1971–May 1973. WILLIAM H. SEWELL, ROBERT M. HAUSER, and DAVID L. FEATHERMAN, Eds. Academic Press, New York, 1976. xxviii, 536 pp. $24. Studies in Population.

A decade has passed since the publication of Blau and Duncan's *The American Occupational Structure* and since *Equality of Educational Opportunity* ("the Coleman report") began to have an impact on research and policy in education. This collection of papers, the result of a series of seminars sponsored by the American College Testing Research Institute, reflects the impact of these two works on quantitative research in sociology and provides an overview of some of the best educational research conducted in the interim. The specialist will welcome the publication of so many new and exemplary additions to the technical literature, and the book offers the nonspecialist a glimpse of what quantitative sociologists have been up to during the last decade.

Substantively, the two major questions addressed are What measurable effects do schools have on their students? and How should we understand the process of achievement in American society? The issue of school effects centers on the degree to which a particular educational context can be viewed as uniquely and causally related to student achievement, aspirations, or ultimate attainments. This question continues to arouse controversy and debate. William Spady ("The impact of school resources on students") ably summarizes the conventional critiques of the Coleman report and argues that the methodological flaws of the various impact studies that have been done are so great as to raise doubts about their conclusions. He points to the crudity of the resource measures available and draws the distinction between "value climates" and the distribution or utilization of tangible assets. I agree that sophisticated techniques are often used injudiciously and that undue emphasis is placed on cognitive achievement. Nevertheless, the weight of evidence clearly indicates that it is being in school that matters, not which school one happens to attend.

David Wiley ("Another hour, another day") argues that it is the amount of exposure to instruction during schooling that influences achievement. Using cross-sectional data from the Coleman report and looking at average daily attendance, hours in the school day, and the number of school days in the year, he estimates the effect of the time spent in school on achievement and concludes that it is crucial. The substantive points Wiley raises are important; his research results, however, have been difficult to replicate (see N. Karweit's analysis based on more extensive data, *Sociol. Educ.* **49**, 236 [1976]).

The two papers by Henry Levin ("A new model of school effectiveness" and "Measuring efficiency in educational production") are the only contribution by an economist; they combine technical virtuosity with a considerable amount of skepticism about the usefulness of econometric models for research bearing on educational policy. As Levin points out, schools are not competing firms and cannot be expected to use inputs efficiently to maximize achievement. I share his concern that in the absence of any certain knowledge about how to augment achievement levels estimating production functions for education can lead to quite misleading results.

A paper by Hauser, Sewell, and Duane Alwin ("High school effects on achievement") and one by Alwin ("Socioeconomic background, colleges, and post-collegiate achievement") report findings from a longitudinal study of the educational aspirations and attainments of a cohort of 1957 Wisconsin high school graduates. The models presented extend earlier empirical work undertaken by Hauser on the effects of schools on achievement, with similar results. In brief, differences between schools have neither an additive nor an interactive effect on students that is sufficiently large or consistent to be considered important. Insofar as there were differences associated with schools along measured dimensions, the differences are attributable to the social composition of the schools. Alwin extends this line of inquiry to higher education. Once again, the effects of attending a particular college on later achievement are negligible. Alwin finds that gross differences between colleges account for 5 to 8 percent of the variance in postcollegiate attainment and that perhaps half of this is accounted for by patterns of selection and recruitment.

Kenneth Feldman and John Weiler ("Changes in initial differences among major-field groups") extend the search for school effects by assessing the role of particular academic fields in accentuating personality differences during the course of an undergraduate career. The authors provide a useful typology of the changes one might expect if exposure to a given course of study influenced the students who enrolled in it. There is some evidence that female students are

more affected by the choice of field than males; however, for the great majority of comparisons, the personality variables seem remarkably stable.

These last three articles formulate the question of educational effects in similar ways. The issue is not which resources or settings are most likely to have an impact on students, but whether it is reasonable to attribute any part of the observed variability in outcomes to the unique influence of the educational context. Were there substantial differences between schools or significant changes in the personality dimensions studied, it would then behoove the researcher to identify the group characteristics, experiences, or processes responsible. Before determining why certain schools or programs produce beneficial results, one must ask the logically prior question, Does association with a particular educational group or environment distinguish the outcomes of one set of students from those of another? The answer to this question seems to be that it does not do so in ways that are measurable and consistent or large enough to be noteworthy. It is an open question whether this is because the distribution of relevant causal influences is sufficiently equitable between groups to obscure their impact or because the actual causal forces at work are independent of institutional context. The implications for education are similar. We cannot expect to manipulate student outcomes by policies aimed at aggregates. We simply do not have sufficient knowledge about the learning process to structure programs or organized activities that will influence students in predictable ways. It is carefully documented null findings of this sort that lead one to conclude that education has become a very dismal science.

Although the search for school effects has been disheartening, it has led analysts to reformulate the question and to investigate achievement processes instead of environments. The core articles in this volume should be understood as elaborating and explicating the process of status attainment. Models in this genre trace their intellectual genesis to the work of Otis Dudley Duncan; the approach conceives of achievement as a social process that develops during the course of the "socioeconomic life cycle." The basic model assumes that background factors, measured primarily in terms of paternal achievement, influence the educational attainment of sons, measured in years of schooling completed, and that both paternal status and educational attainment influence the occupational status of sons. The process of status transmission is judged by the relative magnitude of the relationships between social origins and destinations when intervening influences such as schooling are introduced. Path analysis provides a convenient algebra for decomposing the relationships and a graphic portrayal of the sequence of ordered outcomes posited.

Numerous extensions and replications of the basic model have been published. In this volume, Hauser and Sewell ("Causes and consequences of higher education") incorporate measures of ability, high school grades, and the degree of perceived encouragement from parents, teachers, and friends in the determination of aspirations as well as later attainments. Trevor Williams ("Abilities and environments") examines the impact of family environments on the intellectual functioning of children. In his model, the important mechanisms for the transmission of parental status and ability intergenerationally are derived from social learning theory. The cognitive performance of children is enhanced by exposure to diverse and stimulating environments; children from high-status backgrounds enjoy a "triple advantage," consisting of a superior genetic endowment, a rich social environment, and a greater ability to elicit and control stimuli.

Featherman and Michael Carter ("Discontinuities in schooling and the socioeconomic life cycle") explore the patterning of certification and the duration of schooling by assessing the importance of interruptions or delays in completing education. They find that violating the prevalent lock-step norms does not create disadvantages in attainment that are independent of ultimate schooling. Interestingly, discontinuities are not predictably related to background factors either.

Joe Spaeth ("Characteristics of the work setting and the job as determinants of income") speaks to the problem of specifying an earnings function; accounting for the observed variability in income has been an intractable difficulty in models of this sort. Spaeth argues that job-related factors, such as complexity of task or authority relations among employees, are central. He also suggests that income should not be considered a unitary concept, but must be viewed as the product of constituent elements—wage rates and hours worked, for example.

As the papers in this volume attest, the sociology of status attainment has evolved by incorporating new variables into a very general causal schema. The empirical work is careful and competent; the models, however, are not well developed theoretically, and the work as a rule remains largely descriptive. Social-psychological variables are included with only a minimal appraisal of their substantive meaning or theoretical relevance. I do not doubt that aspiration levels or perceptions of encouragement are implicated in the educational process. It seems unlikely, however, that they are measured with the exactitude of demographic characteristics, nor is it certain that they operate in similar ways. The magnitude of the correlations between attitudes and behavior is highly dependent on how questions are framed; even if one observes a reasonably good empirical fit by assuming linear additive relations, it is necessary to justify the functional form theoretically, and to consider alternative interpretations.

Spaeth ("Cognitive complexity") engages in a bit of conceptual speculation that illustrates how loose the linkages between concept and measurement may be. Essentially, he argues that status attainment is no more than the process of learning to cope with increasingly complex environments. Occupational prestige is assumed to be a proxy for the degree of complexity found in the workplace; schooling is exposure to ever more complex intellectual stimuli. Cognitive complexity, therefore, and not status, power, prestige, or wealth, is the currency of intergenerational exchange. If the conceptual scaffolding is sufficiently imprecise to permit such a radical redefinition of the process, we should ask what has been learned from the empirical analyses. This question is nowhere addressed.

The most interesting paper in the book is from a very different intellectual tradition. John Atkinson, Willy Lens, and P. M. O'Malley ("Motivation and ability") summarize 25 years of research on motivation; the assumptions and strategies of these social psychologists provide a contrast and highlight some of the limitations of the sociological literature on achievement.

Philosophically, the behavioral psychologists are committed to the presumption that the key to understanding social behavior lies in studying individual personality. The objectives of social research have been to refine the measures used to assess personality, which, it is claimed, lawfully determine behavior. Unexplained variance is troubling in such a context, because it implies that

the measures lack validity. Sociologists, in contrast, have traditionally been interested in the degree to which social institutions and inequalities constrain individual achievement. Imperfect prediction is therefore less vexing, since one can interpret indeterminacy as indicative of individual freedom, or choice, rather than as reflecting systemic factors. As Duncan once observed, "No one would want to live in a world in which one could explain all of the variance."

Personality variables, however, tend to be less amenable to direct observation or measurement than those studied by sociologists; consequently, the theoretical and substantive importance of concepts has been more problematic. Psychometricians have spent decades devising tools for measuring unobserved variables, such as ability or motivation, and applying these tools in carefully controlled experimental situations. Correspondingly, they have been far less interested in specifying the causal relationships linking such attributes to social life or in generalizing beyond the laboratory. In contrast, the study of status attainment is a stepchild of population studies. Demographic variables and concerns have dominated the literature until quite recently. Traditional measures of status—occupational positions or years of schooling, for example—required little theoretical explication; they were assumed to be as concrete as the census categories from which they were derived. Social mobility involved the passage from one set of statuses to another; the most interesting questions concerned the linkages between social categories, rather than the variables themselves. Consequently, sociologists devoted most of their attention to estimating structural parameters, which could capture the processes and mechanisms involved.

These two research traditions have much to offer each other. The sociology of status attainment cannot advance by merely collecting new data sets or replicating findings; the questions of primary interest will increasingly involve concepts and measurement problems beyond the scope of current research. Equally, psychological perspectives will acquire new power if embedded in a more general analytic framework. The strength of both approaches lies in the commitment to rigorous quantitative expressions; their weaknesses are complementary. It is as if behavioral psychology has been building the vocabulary, while sociology has been occupied with developing a grammar.

This volume could represent the beginning of a very fruitful exchange. It is not always clear, however, whether the authors really address each other's concerns. Atkinson *et al.* argue convincingly that the presumption of a "correlative chain" is theoretically invalid for a number of social-psychological variables and that motivation and ability interact in complex ways with the nature of the task. If this is so, it has implications for the theoretical status of models incorporating such variables. The origins of motivation and the degree to which it is developed or mediated by social institutions are not at issue for the behavioral psychologists, although this is a central question in other papers. I wish this volume contained more critical commentary and discussion. The editors mention lengthy and heated debates, but the book does not capture the excitement of these disputes. Perhaps a dialogue will emerge in future work.

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Cognition and Social Behavior

New Directions in Attribution Research. Vol. 1. JOHN H. HARVEY, WILLIAM JOHN ICKES, and ROBERT F. KIDD, Eds. Erlbaum, Hillsdale, N.J., 1976 (distributor, Halsted [Wiley], New York). xii, 468 pp. $19.95.

Attribution theory concerns the process by which individuals attempt to understand and explain the causes of human behavior: the manner in which man, cast as a "naive scientist," attributes the occurrence of events and actions to particular causes and the manner in which he draws inferences concerning the attributes or properties of persons and situations with which he has contact. In this general sense, attribution research focuses on two complementary questions. The first has to do with the determinants of particular attributions—that is, the ways in which an individual's understanding of causal relationship and implicit theories of personality and social control are applied to particular social data sets to produce inferences concerning the appropriate interpretation of events or actions—and the second with the consequences of particular attributions—that is, the ways in which the causal inferences an individual draws will affect his predictions, expectations, and overt behavior in subsequent psychologically related contexts.

Such a model casts a large net. It suggests that the very meaning of a given act, in terms of the information it appears to convey or the expectations to which it gives rise, may differ significantly over time or from individual to individual as a function of the attributions made concerning the causes of the act or the interpretation placed on its occurrence. In this sense, attributional constructs have obvious relevance to virtually any sort of social encounter in which there is ambiguity or potential uncertainty.

Indeed, in the decade since the publication of pioneering theoretical papers by Kelley, Jones and Davis, and Bem, attribution research has unquestionably become the dominant theoretical orientation in social psychology, supplanting the cognitive consistency models that dominated the field during the late '50's and early '60's. The present volume provides an opportunity for taking stock of the directions in which attribution research has moved.

At its inception, attribution theory proposed a model of man as an intuitive scientist, a largely rational information-processor attempting to make sense of the myriad complexities of the social environment in which he functions. In his initial formal statement of the model, Kelley suggested an explicit analogy between the processes engaged in by the "man in the street" in his daily interchanges with the social environment and the techniques employed by the social scientist attempting, through the use of systematic experimental procedures and the logic of the analysis of variance, to uncover general laws that govern human social behavior. Interestingly, although such an approach might have led to an extended investigation of these specific logical strategies and their application in the realm of social attributions, it quickly became apparent that the power of the approach lay more in its provision of a framework for considering data from a variety of disparate research areas than it did in the specific formalisms offered by various authors.