noise had little effect on stress reactions, and necessity (is the noise gratuitous or is there good reason for it?) produced equivocal findings.

Glass and Singer place great emphasis on the absence of perceived control as a factor in aversive reactions to unpredictable noxious stimuli. Drawing on the conceptions of other investigators more generally concerned with the nature and meaning of psychological stress, they invoke the concept of "helplessness." Lacking or believing he lacks control over such stimuli, the person experiences "a state of helplessness in which there is an absence of incentives for initiating strategies designed to avoid or escape from the aversive stimuli" (p. 88). The general utility of this kind of explanation will depend in part on whether the effects of other forms of aversive stimulation are related to perceived control in the same manner as in the case of noise. This clearly turned out to be so in the experiments with electric shock. But the studies of social stress stimulation (bureaucratic harassment and personal discrimination) although cleverly designed and executed provide only very indirect evidence that perceived control, predictability, and similar cognitive factors play the same role in this kind of urban stress. What we do learn is that, at least in these experiments, administrative harassment, either in the form of impersonally presented, tedious regulations or of a capricious bureaucratic assistant who makes sure the regulations are enforced, impairs subsequent task performance; and that of the two forms of harassment the latter provokes more negativistic and less compliant behavior than the former. In other words, subjects confronted simply with the set of regulations rather than by a person severely administering them tended to give up the fight. Adverse discrimination in the payment of fees, whether it appeared to be "arbitrary" or "chance," led to poorer task performance, but both kinds of discrimination were less detrimental among subjects who could choose their tasks—and thereby had some control—than among those who not only were discriminated against in payment but had no choice of task. With respect to attitudinal measures, that is "satisfaction" with the experiment and willingness to volunteer for additional research, only those who experienced arbitrary discrimination (in contrast to those who could attribute it to chance) showed significant negative reactions, particularly if they had no choice of tasks.

What of the adaptation process itself? Glass and Singer ask whether the negative behavioral aftereffects of aversive noise occur "because of stress adaptation or in spite of it." By controlling physiological adaptation in a series of studies, they were able to demonstrate quite clearly that the adverse effects of the noise were the result not of the adaptive process but of the cumulative exposure to such stimulation in spite of adaptation.

In the context of laboratory research, it is not difficult to see why this volume was awarded the AAAS Sociopsychological Prize for 1971. The research itself is innovative in its paradigms of urban stress and was carefully and strategically carried out, and its findings are presented and interpreted in careful and parsimonious terms. It stands well above the usual laboratory studies of its kind because it was programmatic, it considered and tested alternative explanations, and perhaps most important was sensitive to some degree to problems of experimenter bias.

Of course one may seriously question how far the representations of such phenomena as frustration by bureaucracy or arbitrary discrimination resembled these phenomena in the outside world. These and similar issues that can be raised reflect the limitations that beset all laboratory studies of complex social behavior. It is easy enough to criticize the experimenter's translation of real-life human interactions, but difficult to suggest something better. But there are two serious limitations of quite another kind in Glass and Singer's research that must be noted:

First, because laboratory research tends to preclude the involvement of just such a critical variable, we would ask whether urban stress in the form of noise (or any other form) can be studied profitably without a consideration of the variable of *time*. There are many questions one can ask. What happens to initial adaptation if exposure is for three hours rather than for the half-hour periods reported in these studies? The reported negative aftereffects of unpredictable noise were found immediately following exposure to noise; what would have happened if there had been longer intervals between the stressful noise and the task activity? Even for the negative aftereffects immediately following the noise exposure, there is the fundamental question of how long they last. Would performance improve say a half hour or an hour later? Finally, it would not be too difficult to demonstrate that cognitive factors as influences on reactions to stressful stimulation are themselves related to time.

The second limitation in the research that must be noted is less patent. It is easy enough to see that the study of complex social behavior in the laboratory is necessarily restricted. One accepts this limitation when undertaking such research. But, are we really any better off in this sense when we study noise in the laboratory? Did the use of the noise tape by Glass and Singer to study the influence of this form of urban stress approximate reality sufficiently well? True, it consisted of a real concatenation of sounds often present in the urban setting; but there is the simple fact that "real noise" in most urban settings does not have the stability of patterning and quality that the sounds presented by means of their noise tape had. We respond not only to intensity but to contextual and qualitative variations in noise as well. Thus, one is left with the uneasy feeling that even for a mechanical stimulus like noise, laboratory manipulations may in the end create a highly specialized phenomenon whose behavioral and psychological principles have limited applicability in the real world.

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Pueblo Studies

New Perspectives on the Pueblos. A seminar, Santa Fe, N.M., Nov. 1969. ALFONSO ORTIZ, Ed. University of New Mexico Press, Albuquerque, 1972. xx, 340 pp., illus. $11. School of American Research Advanced Seminar Series.

The study of Pueblo Indian cultures has been a long-standing focus of interest for American and European anthropologists. This interest stems not from preoccupation with primitive cultures, but rather from other central concerns in anthropology. The Pueblos —like the Jews, the ancient Hellenes, the medieval Celts, the Gypsies, the 20th-century Arabs, and many others —have, in maintaining their own way

of life in the midst of sharply contrasting peoples, developed peculiarly interesting human values the characterization of which is an endlessly challenging problem. Widely diverse among themselves, they nevertheless exhibit a striking unity when set against the solvent flow of merging societies around them. Studies have by no means always been centered on the depiction of the essential Pueblo qualities. As it should be in an attempt to understand any important human phenomenon, investigation has proceeded from many different standpoints. Periodically the varied results have had to be assessed to determine whether or not any direction can be discerned. This is the third major effort during the past 50 years. The result is, as the editor says, a specialized book of interest primarily to those already initiated in Pueblo studies.

The range of topics is wide. There are chapters on the latest speculations by archeologists regarding reconstructions of Pueblo prehistory; the ecological context of ceremonials; the history and results of contacts with other peoples; the various systems of kinship relations; Pueblo languages and techniques for language study; world view and the meaning of ritual clowning; overall patterns of religious thought and practice; literary forms and functions; traditions in music; and demographic factors affecting acculturative change; and finally there is a useful assessment of each contribution by the author of the last synthesis (in 1950) of our knowledge of the Pueblos, Fred Eggan of the University of Chicago.

At least five contributions set new goals and augur important developments in Pueblo studies. One of these is the effort by Richard Ford to develop an "ecological perspective." He carefully defines those features of the physical and human environment which might be quantified to show how Pueblo rituals constitute adaptive mechanisms in an environment of climatic extremes. The paper is programmatic, and it is entirely possible that data are so fragmentary that precise quantification will continue to be elusive. Nevertheless, this clearly conceptualized approach offers the prospect of an important new dimension in our understanding of the already extensively described Pueblo ceremonial life.

Another contribution places us on new ground for the analysis of processes of cultural change. Albert Schroeder discusses what he calls ethnohistory. It is clear that he refers not to history as the Pueblos themselves understand it, but rather to historical research which makes use not only of written documents but also of ethnographic and archeological information. The essay includes many exemplary rules for the synthesis and interpretation of such records which, if excerpted and put together, would make a useful little manual. The important part of Schroeder's essay is his formulation of six phases of Pueblo history based on the conditions under which contact took place and the processes of cultural change which were dominant under those conditions. This has not been done before with this degree of consistency and discernment of what is relevant to the understanding of overall and long-term processes of Pueblo cultural development. It would help for continuing application of the scheme if the assumptions underlying the phase formulation were made more explicit.

Kenneth Hale advocates a means for widening the base and improving the quality of the study of Pueblo and other Indian languages, namely, training Indians not merely as informants, as has been customary, but as full-fledged linguists. He offers as a demonstration a tour de force in the form of 20 pages of linguistic analysis by a Papago linguist, Albert Alvarez, in whose training Hale has participated. The 20 pages are in Papago (with translation) and consist of Alvarez's discussion of what he calls "the sharp-mellow distinction in Papago stop consonants." The value of this approach does not need to be demonstrated in a Pueblo language to be convincing.

Dennis Tedlock's discussion of Zuni oral literature opens up another perspective of some importance. Drawing on his field notes as well as on published texts by anthropologists, he brings us to the threshold of a new illumination of Pueblo literature. The employment of an analysis of formal elements and, more important, what he calls "ethnopoetics," that is to say, Zuni "literary criticism" which embodies Zunis' own classification of literary forms and some of their meanings, seems to open the way to more basic understanding of Pueblo literature.

The editor's formulation of a goal for Pueblo studies in terms of world view seems to me of great importance. This goal is not actually new, but Ortiz's incisively defined concepts are new in Pueblo research and give promise that the special quality of Pueblo culture which has magnetized anthropological (and nonspecialist) interest for so many years can be systematically investigated. The concept guiding this approach is one which has been worked with by others such as Geertz and Lévi-Strauss—the "structure of reality," the fundamental ideas regarding space, time, and being in terms of which Pueblos see and seek to understand the universe. The application of the approach is carried out with respect to a small segment of Pueblo culture, ritual drama and particularly the ceremonial clown, but Ortiz makes very clear the possibilities which use of the concepts and of structural interpretation offers for discovering the foundations of Pueblo thought.

This volume is timely in the sense that Pueblo research badly needed assessment, extremely useful as a summary of results to date, and, most important, direction-pointing for continuing work. The School of American Research in Santa Fe should be congratulated for sponsoring it. It appears to me that the next step in pulling together and giving guidance to Pueblo studies would be another symposium devoted to the subject of "The Pueblos in World Perspective."

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Fatty Acids

Biochemistry and Pharmacology of Free Fatty Acids. W. L. HOLMES and W. M. BORTZ, Eds. Karger, Basel, 1971 (U.S. distributor, Phiebig, White Plains, N.Y.). x, 398 pp., illus. $23.50. Progress in Biochemical Pharmacology, vol. 6.

The importance of free fatty acids as immediate sources of metabolic energy for mammals was not recognized until the 1950's. This delay is ascribable to their low concentration in the circulation; appreciation of their major quantitative and qualitative roles awaited recognition of their extremely high turnover rate and the more general recognition that flux magnitude is as important as concentration. At about the same time, it was also shown that adipose tissue was a major dynamic depot for free fatty acids stored in the form of triglycerides which upon hydrolysis release them to the circulation. Since