thor analyzes had a beneficial side, in promoting efficiency, productivity, and economies of scale, which are not given their due. Second, in light of Noble's own insistence upon the importance of human choice and the wider framework within which his findings can be fitted, it is arguable that corporate capitalism is not the crucial underlying variable that the title and general tenor of the book would suggest it to be. In the final analysis, people, not machines or economic systems, harbor the motives and make the decisions that affect the course of history. The human urge to manipulate, exploit, dominate, and control can assume many poses and wear many masks. No system or ideology, however compelling the rhetoric enlisted in its behalf, can in itself bring about a better future.

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Nonverbal Communication

Face-to-Face Interaction. Research, Methods, and Theory. STARKEY DUNCAN, JR., and DONALD W. FISKE. Erlbaum, Hillsdale, N.J., 1977 (distributor, Halsted [Wiley], New York). xvi, 362 pp. $18.50.

Past research on nonverbal communication, or face-to-face interaction, the term these authors prefer, has been notably lacking in conceptual models. Some investigators have even resisted theoretical formulations or the derivation of hypotheses as being prematurely restrictive given the shortage of careful descriptive work on nonverbal behavior. Duncan and Fiske are identified with this conservative position, as is exemplified by their insistence on beginning with exhaustive descriptions of face-to-face interactions before attempting a conceptual model of the structure or grammar of such interactions.

This book, which is aimed primarily at researchers, is divided into four sections. Initially, the area of investigation and the research strategies deemed appropriate to it are outlined. The authors reject experimental methods, such as the use of programmed confederates, in favor of careful observation of interactions that are "as close as possible to natural conditions." The second part of the book describes correlational patterns emerging from such observations of seven-minute videotaped conversations between pairs of 88 graduate students. Thirty thousand acts were coded and correlated with other acts of the same participant, with acts of the partner, and with several self-report measures of personality. Little relation was found between nonverbal acts and self-descriptive scores. The sex differences that emerged led the authors to recommend that future research take the sex of the interactants into account because it appears that men and women do different things in social interactions and that these behaviors differ whether conversations are with a member of the same or the opposite sex.

The third section of the book reports the fine-grained analysis of eight conversations (four of them from the first study). The focus is on the patterned organization of interactions, and the expressed goal of the investigation is to discover the "manner of segmentation" of the interaction into units. The transcription of speech into segmental phonemes provided an anchor for further analyses of paralanguage and body motion. These analyses in turn led to the identification of a unit called the "speaking turn" and its six constituent cues. This section of the book dramatically illustrates both the arduous nature of fine-grained analysis and its considerable rewards. Many researchers will react with dismay to the seemingly tedious nature of these procedures, but the authors make a compelling case that such an approach provides more interpretable data than does the pursuit of arbitrarily derived hypotheses.

Finally, the authors offer a conceptual model with which to organize this wealth of detailed description. The model gives considerable weight to the coordination of mutual expectations in structuring conversations and to the importance of observed conventions in guiding the smooth flow of interactions. The primacy of organized sequences is restated in the model, making the model more descriptive than predictive, which is as the authors would have it.

Overall, this is a difficult and valuable book for those interested in nonverbal communication. Of the three components offered by the title (research, methods, and theory), the book delivers more on the first two than on the third. The model makes good sense of the research findings, but theory it is not; it neither yields testable hypotheses nor connects conventions with any broader interactional framework.

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Mammalian Behavior

African Ungulates. A Comparative Review of Their Ethology and Behaviorial Ecology. WALTER LEUTHOLD. Springer-Verlag, New York, 1977. xiv, 308 pp., illus. $31.70. Zoophysiology and Ecology, vol. 8.

Birds and primates have been the focus of most of the recent hypotheses relating vertebrate behavior and social organization to ecological variables. This book, a scholarly compendium of findings from recent descriptive and quantitative field research, particularly in East Africa, recognizes that the burgeoning number of studies on ungulates provides a corpus of data on another taxon against which the general validity of such hypotheses can be tested.

The arrangement of the subject matter is along classical ethological lines, thus permitting ready access to comparative summaries of maintenance behavior (for example, feeding, drinking), use of space (for example, migratory movements and ranging), agonism, sexual behavior, and social organization (that is, mating systems in relation to territoriality, group size, and hierarchies).

Although such compartmentalization is time-honored and is appropriate for many purposes, it precludes the kind of synthesis that many field workers today see as the goal of behavioral ecology. A list of communication signals, for example, is presented (in chapter 8) without reference either to the social organization of the species using them or to the environments in which they are employed. The treatment thus discourages consideration of such questions as which ungulates use predominantly vocal, which visual, and which olfactory signals for, say, agonistic encounters as a function of habitat structure and interindividual spacing. Deficiencies of this sort, however, do not detract from the usefulness of having such a thorough catalog, supported by a comprehensive bibliography, of ungulate behavior.

The treatment of concepts underlying classes of behavior is uneven in quality; however, it never rises to creative peaks or sinks into troughs of error. There is an excellent discussion of territory, home range, and dominance, concepts that are frequently confounded. On the other hand, similar care is not taken to disentangle the concepts of aggression, threat, agonism, antagonism, and combat, these being as frequently misused in the literature as those in the preceding list, although Leuthold himself is always carefully correct in his use of them.

If Leuthold had been equally careful