Book Reviews – Buchbesprechungen – Livres nouveaux

J. E. Cohen: Casual Groups of Monkeys and Men (Stochastic Models of Elemental Social Systems). Harvard University Press, Cambridge, Mass. 1971. 175 pp., 50 tab., 3 fig., US \$ 8.00.

The author proposes a family of stochastic models, termed linear one-step transition (LOST) models, which predict observed equilibrium group size distributions and describe the dynamics of systems of social groups.

To criticize a model that should improve the understanding of social behaviour and organization is a rather ambiguous attempt. While from the statistical point of view, the ideas presented may be sound and original, we still do not understand the discrepancy between the mathematical precision and the almost vague conclusions that are, or may be drawn from the models proposed. Such off-hand categories, as 'casual' vs. 'task-oriented' groups, presented without any liability, contribute to the suspicion as concerns social models in general. And 'casual' is the key-word that relates the models to the social systems discussed in this work: sleeping groups of vervet monkey (*Cercopithecus aethiops*) troops, children's play groups in a nursery school, occupancy of passenger cars, or size of parties reserving dinner at a restaurant.

Previously existing probabilistic models, such as truncated Poisson or truncated negative binominal distributions agree with the distribution of size of casual forming groups, but neither account for how those distributions arise nor allow to extract further information from data available. The defining linear differential equations of Cohen's models essentially describe the rate of change of the number of groups or isolates (group size 1) in terms of the number of groups of a specified size as a function of time. The constant coefficients are discussed as model parameters accounting for the propensities that an individual will leave or join a group by attraction or expulsion by groups or group members.

The equilibrial distributions are then shown to depend on the model parameters only and not on time scale. To reveal the systems approach to equilibrium, the numerical solutions of the defining equations, interpreted deterministically, are calculated for both closed and open systems. Unfortunately, variances and covariances of the numbers of groups of each size have been approximated. An exact calculation would provide a more reliable foundation for tests of goodness of fit.

The reader is expected to have some practice in dealing with simple Poisson and binominal models and related statistical test procedures, but as far as the author explicitly develops most of the formalism required, we may suggest his work as an excellent reference for the undergraduate in sociometry or applied statistics. Anthropology and ethology may be inspired by the comprehensive discussion of a variety of models and the challenging conclusion, that the trajectory of the parameters of the models, fit to a historical sequence of primate's social groupings, would then lead to a more concise interpretation of what one calls the phylogenetic evolution of societies.

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S. A. Altmann and Jeanne Altmann: Baboon Ecology. African Field Research. *Bibl. primat.*, vol. 12. Karger, Basel 1970. VIII + 220 pp., 59 fig., 26 tab.; sFr. 45.—.

Since Washburn's and DeVore's baboon studies of the early sixties most field studies on primate behavior have been influenced by anthropological interests. The research questions have been based on the hypotheses that social behavior and organization were adaptations to ecological conditions; that therefore they co-varied with habitats; and that insight into the correlations between primate social systems and habitats would permit inferences from known habitats of early man to his unknown social life. The ecological orientation paralleled a similar new trend in ethology and was accepted by most zoologist monkey watchers.

The proposed aims required that the same primate populations be studied both by an ecologist and by a student of behavior. As it turned out, most field studies were done by single workers who were unable to cope with both tasks. The typical field report of the last decade focused on the social interactions of the resting group. It then described the habitat in qualitative terms, presented travel maps and a list of food species, and ended with speculations on the assumed local adaptiveness of the social system.

The Altmanns' work sets a new standard by devoting a full, heavily quantitative monograph to the ecology of a primate population. It reports original field work on the yellow baboons (*Papio cynocephalus*) of the Amboseli Reserve and extensively reviews ecological knowledge on the other baboon species. As quantitative treatment reveals the space-time patterns of feeding, drinking and sleeping, some common sense expectations are shaken by surprising facts. For example, the rate of alarm reactions is proportional to the time spent in a home range quadrat, not to the frequency with which it is entered. This suggests a steady rate of alarms rather than an alarming effect of a newly entered and, therefore, risky locality. In the descriptive sections the authors avoid declaring that an obviously adaptive group response is typical. It becomes clear that responses to apparently similar situations vary greatly and often inexplicably. In the same vein, migrating males are not treated as a class but in the form of differing individual histories. The authors' mathematical skills, acquired in their earlier work on communication processes, are here applied to the problems of home range use. Data are analyzed and reanalyzed in search of meaningful parameters and of ways to circumvent that pervading difficulty of field work, biased samples. The reader looking merely for the usual type of descriptions may find that certain subjects are mathematically overtreated. He will soon realize, however, that the authors do more than just study baboons. With this book, primate field research begins to test its own methods. Speculations are set apart in the last fifteen pages of the book. The major concept is the 'utility' of a given section of the home range, which is composed of its resource value and its risk rate. 'The perpetuation of the group depends upon its ability so to allocate the distribution of its activities among the parts of the home range that the net utility of the range to the animals is positive, or at least, non-negative' (p. 199).

Primate field research aims at an ecology of social systems. So far, we have had little more than a primate sociology. The Altmanns have now replaced the description of primate habitats by an analysis of interactions with the habitat. This ecology is 'social' in such aspects as the avoidance of predators. As for foraging, it is still predominantly an ecology of the individual. The third and most difficult step, it seems, will have to reveal the social strategies of resource exploitation.

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