

THE PECKING ORDER

Clogg is not very explicit about his reasons for writing his paper. One could wonder whether it is fruitful and appealing to stage a contest between disciplines about who contributed most to the development of statistics. Throughout the paper I perceive a slight irritation that the contribution of the social sciences is denied or belittled by statisticians. This is surely incorrect for those who play the favorable roles in Clogg's examples. It is probably correct for others, but I do not know for how many.

Clogg's paper can certainly help to enlighten those who were simply unaware of the developments cited by him. It remains to be seen, however, whether those newly enlightened statisticians, as well as those who already knew about the developments, will change their views.

This brings me to what I consider to be the latent structure, or hidden agenda, of the paper. This is the academic pecking order of disciplines. Even within mathematics, abstract topology and functional analysis are generally perceived to have a higher status than statistics. Within the domain of mathematical statistics, *The Annals of Statistics* enjoys a higher reputation than, say, *Biometrics* or *Psychometrika*. Among disciplines, mathematics, physics and biochemistry have a better image among the outsiders than sociology or psychology.

The soft sciences cannot boast of spectacular achievements like sending astronauts to the moon or

giving a patient another heart. In their relatively short history as academic disciplines, they have made less visible progress in areas like personnel selection, teaching methods, structure of organizations, ethnic tension and deviant behavior. Perhaps the nonbelievers in the usefulness of systematic empirical research in the social and behavioral sciences form a majority. They are found both within these disciplines, and in the ranks of the "harder" sciences. It may well be that in both camps one shares a feeling that a positivistic research style is not suitable in the study of human beings.

Formal models, of course, never catch the full richness and variation of human behavior and human feelings. It is equally true, however, that formal models of mechanics never fully catch the movements of real objects. In both cases, the abstract model can only be an approximation. Everybody knows and accepts that engineers can work with such approximations. In the study of human behavior it is rather more common to detect feelings of "it cannot be done, and, even if it could, for ethical reasons it should not be done." The book by Bartholomew (1973, section 1.3) contains some interesting thoughts on this issue in the context of applying stochastic process theory to social phenomena. Unlike the correctness of proofs or computer programs, this is an area where each individual has a personal value system that is seldom changed by discussion. Nevertheless, it may be useful to sometimes reflect on such matters, and the stimulating paper by Professor Clogg gave me an opportunity to do so.

Rejoinder

Clifford C. Clogg

I thank the discussants for their stimulating comments, many of which I judge to be consistent with the themes in my paper. The discussants cover several areas of statistical methodology that I either neglected or did not emphasize enough, provide more evidence for the claim that the context of social research has had a major effect on statistical methodology and give alternative points of view concerning how particular methodologies have developed. I agree with almost all of the points they make and so will confine myself to just a few remarks.

BARTHOLOMEW

I strongly agree that the social sciences place new demands on statistical methodology, particularly in

areas such as measurement and measurement error, modeling correlated observations and latent variables. Bartholomew is right to refer to multiple correspondence analysis and recent advances in sampling theory as cases in point. The contrast between the natural or hard sciences and the social or behavioral sciences, insofar as statistical methodology is concerned, is very important to both his and my arguments. I tried to contrast the natural science setting with the social science setting a bit in my paper; also see Clogg and Dajani (1991).

HOLLAND

I was not hopping mad when I wrote the paper, but it is true that my tolerance for foolishness is so low