

Sforza and Edwards's (1967). We provided a summary in our December Reply of the assumptions concerning the mechanism of population differentiation behind Nei's distance measure. We recommend that Nei (1973) and Cavalli-Sforza and Edwards (1967) be read to do justice to the elegant models they provide.

Lastly, we agree wholeheartedly with Mourant that there is much need for collaborative research between Canadian, American, and Soviet scientists, or, for that matter, scientists of any other affiliation whose interests are the ethnogenesis of arctic and subarctic peoples. We hope our article will be a stimulus to such research: it is clear that much more could be accomplished.

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## On Systems Theory in Anthropology

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The panel discussion on the current position of systems theory in anthropology (CA 19:747-53) is fairly balanced, and the recommendations as to the tasks ahead are welcome. Awareness of the promise of systems perspectives is growing everywhere, but at different rates depending upon the techno-economic level attained and the sociopolitical stages passed through by the society in question. The educational system of India is still largely based on the colonial pattern, in which emphasis on fact-finding surveys was necessary for administrative purposes; ethnographic and physical-anthropological studies to divide man into types were useful exploitative devices. The system of training did not develop mechanisms for objective understanding, but stressed the subjective study of social situations through various descriptive-narrative approaches. The result is that divergent tendencies in conceptual orientations and methodologies in Indian social science research have deprived the social sciences in general, and anthropology in particular, of a comprehensive analytical background. The discipline also suffers from the limited amenability of the ethnographic-anthropological data to computer treatment; it is still very short of quantifiable data. In a situation like ours, in which concern is constantly expressed over the uneven development of the conceptual frameworks and research techniques necessary for appreciating reality in the Indian context, any attempt at application of even sophisticated logico-mathematical models should be very carefully considered. The choice of a systems approach, which is no cure-all, simply as an esoteric exercise need not be encouraged. The choice should be determined by our concern: can this approach circumvent information gaps in anthropology?

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by F. R. PITTS

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The ghost of Robinson (1950) still seems to haunt social scientists. Rodin, Michaelson, and Britan state (CA 19:751) that "to apply 'system' characteristics to individual actors is an ecological fallacy." This difficulty can be avoided by gathering data on individuals in large numbers and creating by canonical correlation analysis "person-specific ecologies" (Pitts n.d.). The problems of "webs of mutual causality" (p. 747) can also be handled by canonical correlation analysis. The technology of the analysis exists; what is lacking is the imagination to intuit and gather data on new variables.

The authors similarly feel uneasy in the face of simulation. Simulation is mentioned (p. 747) as a technique that promises little. Yet systems theory (p. 749) "should motivate dependent hypotheses and generate new questions," and (p. 750, italics mine) "a systems model can offer a rough test of . . . hypotheses and may reveal important influences that are not intuitively evident and are difficult to conceptualize in other ways." Simulation techniques also enable us to handle problems noted by early critics of the use of systems analysis, in which "mechanistic links . . . reduce human behavior to determinate output" (p. 751). The use of direct simulation (often called Monte Carlo simulation) with random numbers allows a mechanistic parameter to take stochastic values and produce unique-appearing output.

Finally, one wishes that the authors had mentioned the work by Weinberg (1975), surely the sanest and most attractive introduction to the field of systems analysis.

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