PROPOSAL FOR A RESEARCH PROJECT IN MATHEMATICS
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For the past four years I have taught mathematics to Cuttington College freshmen and sophomores, and this year I have worked with senior education students in the teaching of elementary arithmetic. It has become clear to me that mathematics is one of the weakest areas among our students. Not only are most of the students poor in computational techniques, but also they are poor in logical processes. From my observation this is equally true on the college and on the first-grade level.

Thus I would propose a study of number systems and mathematical processes among the tribal peoples of Liberia, as a means to gain some partial understanding of this phenomenon. As I see this project, it is necessary to determine, in as many tribal languages as possible (preferably all in the country) the following points: what names are used for the cardinal numbers, and by implication what is the basic counting system; how are addition and multiplication of these cardinal numbers performed; what differences arise in handling money rather than other objects; how are additive and multiplicative inverses named; how are the inverse operations performed; how are simple measurements named and performed (lines, areas, volumes, weights, temperatures); what geometrical concepts have been generalized from these measurements; what algebraic techniques have been developed, both for dealing with numbers and for handling geometrical entities; what elementary theorems are known, whether in arithmetic, algebra or geometry; and what logical processes are used for developing new facts from previously-known facts.

If this project is to be carried out in a proper way, it would have to be done with illiterate, but intelligent and mature, tribal people. Cultural patterns are confused by contact with western culture, and thus we must avoid those persons who have had either formal or informal western education. It is, of course, impossible to avoid all contact with western culture, but it should be held to a minimum.

Thus the project would require a good deal of travel, as well as the services of interpreters, preferably Cuttington students or graduates, competent in all the languages as well as competent to understand what it is I am trying to learn. It would be possible to travel by car or by plane to major centers in all tribal areas, and from them to go an hour or two into the bush by foot to reach towns sufficiently far from western culture to ensure minimal confusion of the issues. In each of these towns, a few hours of questioning would be sufficient to accomplish my purposes, once a basic questioning procedure had been established and validated. The questioning procedure is, of course, the most critical and difficult aspect of the study. I would certainly wish to consult anthropologists and linguists in this connection; and I would certainly wish to acquaint myself with any relevant previous studies.

I would thus propose that the project be divided into four parts: first, a survey would be made of studies and procedures already developed, perhaps in the United States this winter or next year at Cuttington by correspondence; second, a questioning procedure would be worked out with the help of Kpelle people in the Cuttington vicinity; third, the survey would be made in every tribal area possible; and fourth, the results would be collated and correlated, and general conclusions reached and published.

These conclusions should help to illuminate how Liberian mathematical patterns affect the later study of mathematics in school, by showing how the traditional patterns differ from the western patterns, thus indicating how the latter can be modified in the direction of the former for better teaching. The study should also incidentally shed light on the interrelations between the various tribes, through a controlled study of the vocabularies and procedures in one isolated subject-area.