

INTRODUCTION
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PROPOSED RESEARCH PROJECT

SUMMER 1968

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May 31, 1968

In recent years a controversy over the nature of social stratification in the United States has arisen. Some argue that discrete, mutually exclusive groups make up the stratification system while others feel the structure is continuous in nature with no definite boundaries between strata. To hopefully gain a better insight into these concepts I propose to utilize recently developed methods of classifying multivariate data, namely clustering techniques such as ISODATA investigated by Ball and others at Stanford and other schools and research centers, in analyzing data considered relevant to determining social status to find the points of natural grouping.

Work will proceed on the hypothesis that discrete social groups will appear from the data gathered if this information is analyzed with clustering techniques. Clustering techniques are methods applied to multivariate data to objectively and scientifically determine the natural groupings and divisions within the material analyzed. Social stratification refers to the classification of members of a society into a social order with respect to other members of the society. Proponents of continuum theories feel that no definite, consistent, and easily distinguishable boundaries exist between groups in the stratification system. Those adhering to the theory of discrete groups take the opposite viewpoint, stating that patterns of interaction, styles of life, and other variables point to the existence of mutually exclusive discrete groups within the society.

Through the school year several months were spent doing general reading on the subject of applications and uses of mathematics in the social sciences. We then proceeded to readings on the philosophy of science and concept formation and utilization. At the same time we began to delve more deeply into work done on clustering techniques.

These techniques have been perhaps most utilized by biologists, particularly taxonomists, such as Robert Sokol, in determining and checking the validity of previously determined biological classifications. Ball and Hall at Stanford Research Institute have done extensive research on clustering techniques, analyzing various methods used and developing ISODATA, probably the method most suited for the proposed project. In 1966 a "Conference on Cluster Analysis of Multivariate Data" was held in New Orleans, La. The papers from this meeting were reviewed, giving greater insight into recent developments and applications and methods of clustering data.

The field of social stratification has had much more extensive research than have clustering techniques. (Beginning in the 1930's, W. Lloyd Warner and his associates extensively analyzed communities in the United States, arriving at the conclusion that a definite class structure does exist.) To determine an individual's or family's position in the structure Warner recommends utilizing two measures, between which he found a high correlation in their evaluations. The first one, which he termed Evaluated Participation, uses several rating techniques through

which community members evaluated their fellow citizens. The second technique, called Index of Status Characteristics, measures through a system of weighted evaluations, social characteristics of occupation, source of income, house type, and dwelling area.

(Other researchers, many employing anthropological type techniques, and some utilizing different methods, have arrived at similar conclusions. Davis and Gardner in a study similar to Warner's found what they considered discrete classes in the southern United States. Robert Ellis in a study of a Jamaican village considered the stratification system of the area as being discrete. In his analysis he utilized a method of determining social distance between individuals. Ellis has also written a paper giving several methodological criticisms of techniques of research supporting the continuum theories.

Lanckner, in his study of Detroit, expounds upon a class boundary concept. He points to a definite break between the upper class and the rest of society, the structure of which corresponds to continuum theories. Lenski, using a method of status crystallization, reached a similar conclusion.

Guber and Kenkel have been one of the main supporters of the continuum theories. They refer to work by Max Weber and suggest that analysis of the class structure of the society is needed in at least three orders: the economic order, the prestigial or honorific order, and the power structure. The cite disagreements over the number of classes

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within any community and the lack of clear demarcations between classes as principal reasons for rejecting the discrete group hypothesis. They cite the need for accurate conceptions for the development of sound social science.

Roger Brown also supports the continuum side of the controversy and cites four conditions that are necessary if the class concept is to be deemed real: 1) The population must be conscious of the class distribution, its size and membership. 2) The styles of life are uniform within a strata and strikingly different between strata. 3) Interaction within the society is patterned by the class structure. 4) The boundaries set by the three types of data are consistent.

To determine the validity of the hypothesis stated earlier data of the type suggested by Brown and Warner will be gathered from a stratified sample of Eugene-Springfield residents. This data would then be analyzed using clustering procedures to see the extent to which natural patterns and groupings appear lending support to the hypothesis.

Summer work will include final preparation of the questionnaire and selection of the sample, pretesting the methods to be used, evaluating and revising the methods, and then gathering the data, which must then be programmed and processed. About two hours of computer time will be needed for the project. At this point it is expected that several interesting mathematical problems connected with clustering techniques will be encountered and it is hoped that it will be possible to work on these to provide additional insight into the data as analysis proceeds.

If time and data permit, a recheck of the data utilizing traditional classification methods would be an interesting exercise to determine the similarity between results gained by clustering techniques and those through traditional methods. This could be a significant check upon the validity of the concept of social class.

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