SOCIETAL COMPLEXITY: AN EMPIRICAL TEST
OF A TYPOLOGY OF SOCIETIES[1]

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ABSTRACT

Does the concept of societal complexity refer to a single dimension? Data have been gathered from a sample of forty-eight societies and scored according to Guttman's scalogram analysis. Six out of eight variables tested vary systematically and constitute an acceptable scale. This is empirical evidence for the relevance of societal complexity. The study demonstrates a technique for testing polar ideal types which allows the investigator to determine whether or not they are empirically based.

Among pairs of polar ideal types, one of the early and best known is Tönnies' *Gemeinschaft* and *Gesellschaft*, terms by which he characterized two types of social organization.[2] Durkheim made a similar distinction in contrasting *solidarité mécanique* with *solidarité organique*.[3] Contrasts have been drawn between sacred and secular societies,[4]—Robert E. Park, in his lectures in the twenties, contrasted sacred and secular societies—culture and civilization,[5] kinship and territory,[6] and more recently stated in the folk-urban continuum[7] and in the dichotomy, tradition-directed and other-directed types of character.[8] These, a few of

many similar distinctions, are polar ideal constructs, differing only in the emphasis which each places on some specific aspect of social patterning. They make the same basic distinction and consequently will be considered in the present analysis as concepts referring to societal complexity.

Some writers have argued that these concepts imply empirical relationships;[9] others that they are distortions, albeit voluntary, of them. The latter writers would hold that, if these concepts have any utility whatsoever, it would be merely to sensitize observers.[10] It is the judgment of the present authors that there is a measure of truth on both sides and that this seemingly, irreconcilable argument can be resolved through examining the nature of ideal typologies. First, such a typology "ordinarily connotes a plurality of correlated characteristics."[11] For example, geographical isolation, importance of kinship, and undifferentiated labor are presumed to be correlated in the folk so-

[2] Ferdinand Tönnies, *Fundamental Concepts in Society*, trans. and ed. Charles P. Loomis (New York: American Book Co., 1940).

[3] Émile Durkheim, *The Division of Labor in Society*, trans. George Simpson (New York: Macmillan Co., 1933).

[4] Harry Elmer Barnes and Howard Becker, *Social Thought from Lore to Science*, Vol. I [New York: D. C. Heath & Co., 1938]).

[5] Albion W. Small, *General Sociology* (Chicago: University of Chicago Press, 1905).

[6] Henry Sumner Maine, *Ancient Law* (London: J. Murray, 1861).

[7] Robert Redfield, "The Folk Society," *American Journal of Sociology*, LII (1947), 293–308.

[8] David Riesman, *The Lonely Crowd* (New Haven: Yale University Press, 1950). Of his three types, these two are pertinent here.

[9] Robert F. Winch, "Heuristic and Empirical Typologies: A Job for Factor Analysis," *American Sociological Review*, XII (1947), 68–75; and Horace Miner, "The Folk-urban Continuum," *American Sociological Review*, XVII (1952), 529–37.

[10] Melville J. Herskovits, *Man and His Works* (New York: Alfred A. Knopf, 1949), pp. 606–7; Redfield, *op. cit.*, and "The Folk Society and Culture," *American Journal of Sociology*, XLV (March, 1940), 731–42; Howard W. Odum, "Folk Sociology as a Subject Field for the Historical Study of Total Human Society and the Empirical Study of Group Behavior," *Social Forces*, XXXI (March, 1953), 193–223.

[11] Winch, *op. cit.*

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ciety. The correlation among these characteristics, or, more precisely, among the indexes of them, is an empirical matter. To be sure, the degree of correlation is frequently registered in an impressionistic, intuitive, even unwitting, manner rather than by formal operations. Second, the capacity of the typology to sensitize observers may be increased by assuming that pure cases exhibit extreme values, which constitutes the (voluntary) distortion, and to this extent the ideal typology departs from "reality."

This discussion does not solve the methodological problem. Criteria must be provided for accepting or rejecting a typology on the basis of the observed intercorrelations among its indexes.

Societal typologies involve the assumption of systematic differences among societies in a number of variables and thus of systematic variation among the variables themselves.[12] In the language of factor analysis, their interrelationship is described by the single-factor model; in scale analysis by the model of unidimensionality. Here, then, is a proposition amenable to empirical test: To what degree, if any, can the typology of societal complexity be shown to be a single dimension? If the model is consistent with the data, a set of cultural variables should vary systematically together as a continuum of a single underlying attribute. If, on the other hand, the model does not apply, then no empirical basis can be provided for the typology in question; it is a concept without a referent.

The aim of the present study is to select a set of societal variables regarded as registering societal complexity, to determine whether or not they constitute a single dimension, and hence to ascertain whether there is empirical evidence of a unitary attribute, societal complexity. The Guttman technique of scale analysis, which was employed,[13] permits three possible outcomes: a single scale or quasi-scale; two or more

scales; or no systematic interrelationships at all. Only the first possibility would lend support to the hypothesis.

Developed for the study of attitudes, the Guttman technique involves the systematic ordering of complex qualitative data. It is reasonable to suppose that the scaling model may be as helpful in cross-cultural research as in the investigation of attitudes.

Selection of variables for this study raised some special problems. Some of the criteria for classifying societies as to complexity are ambiguous. It would be difficult to rank societies, for example, according to their degree of in-group feeling. Many of the terms employed in the ethnographic reports which are the only source of data are vague, making it difficult or impossible to compare their data. Therefore, variables were sought which the ethnographers would report with the minimum of interpretation. Eight such variables have been used. They have been dichotomized, and one category (designated *b* in Table 1) is construed as representing less complexity, while the other (designated *a*) represents greater complexity (see Table 1).

The characteristics treated in Table 1 cover in relatively unambiguous terms many of the major aspects of culture. The list is certainly not exhaustive, nor is it a random sample. However, Guttman has pointed out that such sampling is unnecessary in scale analysis, since demonstration of unidimensionality guarantees that all items represent a single universe.[14] It is necessary only that the items all be drawn from a single universe—in this case, the various conceptions of societal complexity—and that they do not cluster at a single point along the continuum.

In sampling societies, there are two major difficulties. In the first place, the universe of man's societies, past and present, is unknown. Furthermore, there are known societies upon which no reliable data are available. Therefore, a random sample of societies would undoubtedly include some lacking adequate information for research. Second, Boas and others have stressed the

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[12] Miner, *op. cit.*

[13] Samuel A. Stouffer *et al.*, *Studies in Social Psychology in World War II*, Vol. IV: *Measurement and Prediction* (Princeton: Princeton University Press, 1950), chaps. i–ix.

[14] Louis Guttman, "The Basis for Scalogram Analysis," *ibid.*, pp. 80–82.

hazards in selecting societies which have been in contact with each other;[15] they are no longer independent, and similarities among them could result from diffusion.

In order to insure independence and increase applicability, the sample was chosen to make the most of cultural variability. The forty-eight societies were selected by the procedure reported by Professor G. P. Murdock.[16] The societies suggested by Murdock represent most major culture areas of the world, and their geographic and historical heterogeneity should certainly assure variability (Table 2).

Data were obtained from the Cross-cultural Survey and the Human Relations

[15] Franz Boas, "Anthropology and Statistics," in W. F. Ogburn and A. Goldenweiser, *The Social Sciences and Their Interrelations* (Boston: Houghton Mifflin Co., 1927).

[16] George Peter Murdock, *Outline of World Cultures* (New Haven: Human Relations Area Files, 1954).

Area Files. Since an effort had been made to employ only relatively unambiguous variables and to require only dichotomous judgments and since, therefore, there was little room for the exercise of discretion, the reliability of ratings was not estimated. A schedule consisting of eight simple dichotomies was devised; so the investigator was required only to look under the appropriate classification and ascertain the facts, as, for example, whether the Koreans had a written language or not or whether the Aranda used a symbolic medium of exchange.

Application of Guttman's scaling model to the data did not yield a perfect scale. Two items—exogamy and mate selection—varied independently of the other six. The Israel Alpha Technique was employed to test for the presence of a quasi-scale.[17] Results were

[17] Louis Guttman, "The Israel Alpha Technique for Scale Analysis," in Matilda White Riley *et al.*, *Sociological Studies in Scale Analysis* (New Brunswick, N.J.: Rutgers University Press, 1954).

TABLE 1

CHARACTERISTICS OF SOCIAL COMPLEXITY IN THE SCALOGRAM ANALYSIS

Characteristic	Classification of Complexity
1. Exogamy	*a,* Incest taboos extended only to include secondary relatives *b,* Further extension of taboos
2. Punishment	*a,* Crimes against person or property punished through government action *b,* Crimes avenged by the person wronged, his kin group, or the gods
3. Government	*a,* Full-time bureaucrats unrelated to government head present *b,* Part-time bureaucrats, bureaucrats related to government head, or none
4. Education	*a,* Formal, with full-time specialized teacher *b,* Informal, without full-time specialized teacher
5. Religion	*a,* Full-time specialized real priest—not diviner or healer—present *b,* No full-time specialized priest present
6. Economy	*a,* Symbolic medium of exchange—real money—present *b,* Barter and exchange the sole economic mechanisms
7. Mate selection	*a,* Beauty stressed in desirability of a mate either alone or along with skill and fertility *b,* Skill and fertility demanded to the exclusion of beauty
8. Written language	*a,* Written language present *b,* Written language absent

negative, and the two offending items were dropped, whereupon the remaining six formed a nearly perfect arrangement (Table 3). While reproducibility was not perfect for the six items, there were only nine scale errors, and the resulting array closely approximated the model.

Since scalability was not perfect, two techniques were used to evaluate the error.[18]

TABLE 2

SOCIETIES IN THE SAMPLE

North America:	Oceania:
Copper Eskimo	Balinese
Creek	Buka
Crow	Andamanese
Hopi	Maori
Menomini	Aranda
Navaho	Woleaians
Sanpoil	Ifugao
Yurok	
	Russia:
Asia:	Ukrainians
Vietnamese	Chukchee
Koreans	Yakut
Lepcha	Ossett
Formosan aborigines	Kazak
Lakher	
	South America:
Africa:	Cuna
Azande	Siriono
Chagga	Cayapa
Hottentot	Tupinamba
Mbundu	Jivaro
Thonga	Yaruro
Twi-Ashanti	
Venda	Europe:
	Czechs
Middle East:	Elizabethan English
Iranians	Imperial Romans
Riffians	SE. American Negroes
Kababish	Lapps
Ancient Hebrews	
Siwans	

Guttman's coefficient of reproducibility was equal to .97, well above the arbitrary minimum of .90.[19] Menzel's coefficient of scalability produced a value of .76, again surpassing the suggested minimum, .60–.65.[20] The

data therefore clearly demonstrate a scale among six of the eight tested items: punishment, government, education, religion, economy, and written language vary together to form a unidimensional array.

In conclusion, the demonstration of unidimensionality among six characteristics is evidence that the items constitute a scale. Since these qualities are all subsumable under folk urbanism, *Gemeinschaft-Gesellschaft*, and the other polar constructs of that order, the conclusion is that Redfield, Tönnies, *et al.* have indeed been describing a unidimensional phenomenon—societal complexity.[21] Furthermore, this analysis has established a series of scale types or positions of societal complexity (Table 4), which may be used to describe and arrange societies, as well as merely to sensitize observers, as some have claimed. The types characterize each culture as to the given variables; moreover, they allow comparison of the complexity of one culture with another. The result not only indicates the generalizability of cultural phenomena but provides suggestive material for constructing further theories of cultural form and process.

The variables themselves may also be systematically arranged, suggesting a whole set of diachronic hypotheses. Their arrangement in Table 4 might express the sequence of development as a society increases in complexity. Thus we might hypothesize that as a society of the least complex type became more complex, it would first adopt a money economy, then a formal legal system, full-time priests, educators, and government bureaucrats in that order, and, finally, a written language.

There is no reason to suppose that other items will not vary systematically with

[18] E. F. Borgatta uses an "error ratio" in evaluating scalability, but, since there is neither a known distribution of this statistic nor even an arbitrarily suggested level for acceptability, it was not applied in this study (cf. E. F. Borgatta, "An Error Ratio for Scalogram Analysis," *Public Opinion Quarterly*, XIX [1955], 96–100).

[19] Edward A. Suchman, "The Scalogram Board Technique for Scale Analysis," in Stouffer *et al., op. cit.*, pp. 91–121.

[20] Herbert Menzel, "A New Coefficient for Scalogram Analysis," *Public Opinion Quarterly*, XVII (1953), 529–37.

[21] Cf. the experiment by L. T. Hobhouse, G. C. Wheeler, and M. Ginsberg, *The Material Culture and Social Institutions of the Simpler Peoples* (London: Chapman & Hall, 1915), which, though concerned with testing an evolutionary scheme, gave results consistent with those reported here.

TABLE 3

Scale of Societal Complexity

Society	Characteristic											
	Complex						Non-complex					
	8	3	4	5	2	6	8	3	4	5	2	6
Vietnamese	×	×	×	×	×	×						
Czechs	×	×	×	×	×	×						
Iranians	×	×	×	×	×	×						
Koreans	×	×	×	×	×	×						
Lapps	×	×	×	×	×	×						
Riffians	×	×	×	×	×	×						
Elizabethan English	×	×	×	×	×	×						
Imperial Romans	×	×	×	×	×	×						
SE. American Negroes	×	×	×	×	×	×						
Ukrainians	×	×	×	×	×	×						
Ancient Hebrews	×		×	×	×	×		×				
Hopi		×	×	×	×	×	×					
Twi-Ashanti		×	×	×	×	×	×					
Creek		×	×	×	×	×	×					
Navaho		×	×	×	×	×	×					
Venda		×	×	×	×		×					×
Balinese			×	×	×	×	×	×				
Cuna			×	×	×	×	×	×				
Maori			×	×	×	×	×	×				
Chagga			×	×			×	×			×	×
Lepcha				×	×	×	×	×	×			
Mbundu				×			×	×	×			
Cayapa					×	×	×	×	×			
Lakher					×	×	×	×	×	×		
Thonga					×	×	×	×	×	×		
Sanpoil					×	×	×	×	×	×		
Osset			×			×	×	×		×	×	
Kababish				×		×	×	×	×		×	
Siwans						×	×	×	×	×	×	
Yurok						×	×	×	×	×	×	
Yakut						×	×	×	×	×	×	
Kazak				×			×	×	×		×	×
Woleaians					×		×	×	×	×		×
Azande					×		×	×	×	×		×
Aranda							×	×	×	×	×	×
Siriono							×	×	×	×	×	×
Chukchee							×	×	×	×	×	×
Copper Eskimo							×	×	×	×	×	×
Ifugao							×	×	×	×	×	×
Tupinamba							×	×	×	×	×	×
Andamanese							×	×	×	×	×	×
Crow							×	×	×	×	×	×
Jivaro							×	×	×	×	×	×
Formosan aborigines							×	×	×	×	×	×
Hottentot							×	×	×	×	×	×
Menomini							×	×	×	×	×	×
Buka							×	×	×	×	×	×
Yaruro							×	×	×	×	×	×

those studied, allowing the generalizations to be extended further. That two variables—exogamy and mate selection—would not fit into the unidimensional scale indicates that some conceptions of complexity include unrelated characteristics. Further studies must be made in order to determine which of the remaining hypothesized variables are related to the scalable set and which are extraneous.

Finally, this report has demonstrated a technique for testing cross-cultural theories. In using it, the investigator reveals the assumptions underlying the study and its logic. Furthermore, by this technique the concepts may be divested of unrelated characteristics on the basis of empirical evidence. The procedure has a wide range of applicability, including use where quantative data are unavailable.

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TABLE 4

SCALE TYPES OF COMPLEXITY

TYPE	Written Language	Government	Education	Religion	Punishment	Economy	FREQUENCY
	COMPLEX CHARACTERISTIC*						
6	×	×	×	×	×	×	11
5	..	×	×	×	×	×	5
4	..	..	×	×	×	×	4
3	..	..	..	×	×	×	2
2	..	..	..	..	×	×	6
1	..	..	..	..	..	×	6
							14

* × indicates the presence of a complex characteristic.