DOCUMENT RESUME

ED 036 787 AL 002 292

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TITLE Implicational Scales and Sociolinguistic Linearity.
PUB DATE Dec 69
NOTE 22p.; Revised version of a paper presented at the 44th annual meeting of the Linguistic Society of America, San Francisco, December 1969

EDRS PRICE EDRS Price MF-$0.25 HC-$1.20
DESCRIPTORS Dialect Studies, *Language Styles, Linguistic Competence, Linguistic Performance, *Measurement Techniques, Regional Dialects, *Social Dialects, *Sociolinguistics, Transformation Generative Grammar
IDENTIFIERS Frequency Analysis, *Implicational Analysis

ABSTRACT

The writer introduces the idea of sociolinguistic competence, the ability of a speaker to produce and recognize an infinite number of inter-idiolectal code switches, and discusses two methods of dealing with such language variations: frequency analysis and implicational analysis. In frequency analysis, the method used by sociolinguists such as Labov and Wolfram, the linguistic data are correlated to non-linguistic data, resulting in a statement of the frequency with which a given linguistic form appears in a given non-linguistic context. Frequency analysis, in generalizing the empirical description of a corpus, deals with linguistic performance. Implicational analysis, on the other hand, "attempts not to describe a set of speech acts but to model the idealized competence of the persons involved in those speech acts." Variations are explained by a set of conditional statements of the form: If F1, then F2; if F2, then F3, etc. Implicational analysis is preferred to sociolinguistic work because implicational scales, having been structured without reference to non-linguistic data, permit the correlation of socio-economic and other contextual data to linguistic variation, continuously and without circularity of argument. The significance of the linearity of implicational scales and their place in a generative grammar are also discussed. (FWB)

IMPLICATIONAL SCALES AND SOCIOLINGUISTIC LINEARITY

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1. Language variation and linguistic theory.

Language variation has always been a tough problem for linguistic theory (DeCamp 1969; Labov 1969). Usually the variables in language have been excluded from grammars, either by relegating them to "free variation" or by treating each variety of the language as if it were a separate language with a unique grammar of its own. The Chomskian dichotomy of competence vs. performance at first seemed to pose the same problems as had De Saussure's langue and parole: two varieties are either a matter of performance or else belong in two separate competence grammars. It was known that at least part of language variation was rule governed and not freely varying, hence a part of competence, but there was no way seen to incorporate it into the theory.

The strongest argument for generative grammar has always been the fact that every schoolboy is able to produce and to recognize any of an infinite set of sentences, a feat that can be explained only by assuming a finite generative grammar containing at least one recursive element. It is also a fact, however, that every schoolboy is able to produce and to recognize an infinite number of inter-idiolectal code switches. That is, he controls not only his basic stock of an infinite number of sentences, but also multiple variants of each of these sentences: all those, in fact, which are appropriate to his social experience. The subtle shifts of style as he talks with his peers, with his teachers, with his parents, etc., are too numerous to have been separately learned; yet learn them he must, as is proved by the inarticulate confusion into which he is thrown when he is thrust into an unfamiliar social situation (e.g., a formal tea party). Even within a child's limited social experience, he becomes sensitive to many shades of pomposity, of intimacy, of aggressiveness, etc. In other words, he acquires sociolinguistic competence. It follows that some kind of generative device is also necessary to account for that sociolinguistic competence.

Language variation is functionally of two types: intra-speaker (i.e., styles) and inter-speaker (i.e., dialects). The linguistic structures involved in these two functions are not necessarily distinct, however. A speaker may be able to shift back and forth between two dialects (i.e., diglossia) and features of formal style might be more frequently encountered in a suburb than in the ghetto. It has been repeatedly demonstrated by sociolinguists that the set of linguistic features which distinguish formal from informal style tend to be similar to those which distinguish advantaged from disadvantaged socio-economic levels. Formality of style and socio-economic level are certainly interrelated, though not identical. Any linguistic description of variation must operate across speakers as well as within speakers. In fact, a grammar need show no distinction between inter-speaker and intra-speaker variation. The fact that no one living speaker can operate throughout the range of all the varieties of his language is merely an accident of performance. No one person uses all the half million words in Webster's Third either, yet we still talk about "the vocabulary of English" as if each of us commanded all of it. The locus of a language is the speech community, not the central nervous system of some individual speaker, and it is communal competence rather than idiosyncratic performance which we wish to describe.

Previous linguistic theories provided for free variation. The overall pattern was basically the union of all variants, the common core was the intersection of all variants. No pre-generative theory provided for dependent variation, however, where the choice of variant a rather than a' made predictable the choice between variants b and b'. A style shift is not merely the accidental co-occurrence of many freely independent variables. Rather it is itself an abstract entity which ought to have a place in the grammar, like a master switch which one can throw and thus control a whole series of subordinate switches. It is not enough for a grammar to provide for code switches; it must also account for the fact that some switches control others.

The device which enables a generative grammar to provide such control is the semantic-syntactic feature. A rule of the form

$$[\ +F_1\ ] \longrightarrow [\ \pm F_2\ ]$$

marks a segment of a deep structure as $[+F_2]$ or as $[-F_2]$. Any number of later rules (i.e., subsequent in the derivation) can be triggered or blocked by this $[+F_2]$ or $[-F_2]$. Transformations, lexical selections, and phonological rules can all be controlled by the earlier choice made of $[\pm F_2]$. This F_2 may be a semantically significant feature such as [± masculine], which controls subsequent pronominalization rules. It may have only stylistic significance, as, for example, [± extraposition] or [± indirect object movement], yet still exercise control over the subsequent derivation. By means of "rule features", any rule or even a portion of a rule may be permuted in order, may become obligatory, or may be blocked. Gary Prideaux (1966) described the occurrences of Japanese honorifics in rules controlled by features such as [± Humble, ± Familiar, ± Adult, ± Honorific, ± Exalted].

If there were only two varieties of the language (e.g., pompous and non-pompous), it would be a simple matter to include any necessary number of variable rules, all of them under control of the feature [± pompous]. If there are three, four, even hundreds or thousands of varieties, the same approach will be theoretically possible, but prohibitively complex. Because every normal child is multidialectal, he must somehow have control over many more variable features than he can be consciously aware of. This is possible because many features are hierarchically ordered. If a given noun is marked [+ abstract], for example, it would be redundant to specify that it is also [- animate, - human, - masculine]. These features may be omitted from the lexical representation and supplied by redundancy rules. Similarly, redundancy rules could specify that any segment marked [+ pompous] would also be [+ formal] and [- casual]. In other words, the speaker directly controls some of the control features and the rest are filled in without the necessity of conscious decision. What we need is a feature schema, a device with which certain features control other features which are hierarchically subordinate. That device, I have suggested, is the implicational scale.

2. Frequency analysis vs. implicational scales

Implicational scales (sometimes called Guttman scalograms) have been used in other disciplines for decades, but only recently have they been used in linguistics.[1] Most of the studies of linguistic variation which have appeared in the last two years have involved either implicational scale analysis or variable frequency analysis, but not both. Certain linguists have therefore wrongly assumed that implicational analysis and frequency analysis are rival "theories", or at least alternative analytical devices.

Frequency analysis is the older and better known of the two. The linguistic data are correlated to non-linguistic data, resulting in a statement of the frequency with which a given linguistic form appears in a given non-linguistic context. For example, Table 1 (from Fasold 1969:5, based on Wolfram 1969) presents the negative correlation between r-dropping and social class in Detroit in terms of the frequency of r-less forms in each of four social classes. The higher the social class, the lower the frequency of r-dropping.

Table 1: Variable frequency analysis.

Social Classes	Absence of [r] in V__
Upper Middle	.21
Lower Middle	.39
Upper Working	.61
Lower Working	.71

An implicational analysis is a binary relation between linguistic features and language varieties (dialects, styles, etc.) so selected and so arrayed in order, as to result in a triangular matrix (see Table 2).

If the value of any square in the matrix (i.e., the product of F x V) is 1, it implies that the value of any square above or to the left

Table 2: Implicational scale analysis

Features F_1	F_2	F_3	F_4	F_5		
1	1	1	1	1	V_1	Varieties
1	1	1	1	0	V_2	
1	1	1	0	0	V_3	
1	1	0	0	0	V_4	
1	0	0	0	0	V_5	
0	0	0	0	0	V_6	

is also 1. A value of 0 implies that the value of any square below or to the right is also 0. Such a triangular matrix obviously does not accommodate just any random set of features. Every pair of features implies an empty cell; i.e., for any pair of features F_i, F_j ($i < j$), only three of the four possible combinations occur:

Table 3: Pair of features implying an empty cell.

$+F_i$, $+F_j$	——
$+F_i$, $-F_j$	$-F_i$, $-F_j$

The combination of $-F_i$, $+F_j$ simply does not occur for any features eligible for implicational analysis, for a $-F_i$ implies a $-F_j$. Note that conversely, given the value of V_i and V_j for any one feature, we can similarly predict an empty cell (see Table 4).

Frequency and implicational analyses are not rival procedures, for they involve entirely different conceptions of what a theory should

Table 4: Pair of varieties implying an empty cell.

$+V_i, +V_j$	
$+V_i, -V_j$	$-V_i, -V_j$

be and do. Frequency analysis attempts to generalize an empirical description of a corpus. However large the corpus, it is still a set of linguistic performances in context that are being described. Because such a corpus normally contains gradient frequencies of covariables (e.g., r-dropping and socio-economic level), a frequency analysis must include gradient correlations.

Implicational analysis attempts not to describe a set of speech acts but to model the idealized competence of the persons involved in those speech acts. Variable behavior of the speaker is accounted for by means of whole schemata of conditional statements: if F_1 then F_2, if F_2 then F_3, if F_3 then F_4, etc. Sociolinguistic competence does not consist of meters and variable controls designed to maintain and to recognize a specified frequency. The speaker does not monitor his own frequencies and think "Hm! The atmosphere is getting very formal since the professor entered the room. I'd better increase my frequency of phrase-initial whom from five to fifteen percent." Rather he faces a complex set of discrete decisions (to ain't or not to ain't), and a set of implicational consequences of those decisions, equally complex but largely automatized (if ain't, then it don't). Labov's work has shown that a listener may react to an increase in frequency of socially significant signals, but the reaction is a categorical one, as if the speaker had totally changed signals instead of merely changing their frequency (Labov 1969: 58 and Fn 30).

Frequency analysis belongs to the world of inductive theories, generalizations about the real and empirically-observable universe around us. It is essential to any theory of linguistic performance. Implicational analysis, however, belongs to the unreal world of theoretical models, artificial universes invented by theoreticians, like the universe of geometry, which contains perfect circles, squares, triangles, and other figures not found in the real world. You do not obtain a square by carefully measuring thousands of floor tiles and then averaging the measurements, for a square has four equal sides by *a priori* definition, not by empirical measurement. However, geometry is useful to us precisely because there are shapes in our real world which, though irregular, are similar enough to the ideal geometrical shapes that they can be described by surveyors and navigators as if they really were circles, squares, and triangles. Implicational scales for linguistic variation can indeed be constructed, but we must now ask whether they are useful to the linguist in the way thet circles, squares, and triangles are useful to the surveyor and the navigator.

3. *A linguistic continuum.*

Note that the implication of an empty cell (cf. Tables 3 and 4) makes it possible to array three groups of speakers in the same linear series on the basis of their usage on two features (see Table 5). The fourth mathematical possibility, $+F_1$, $-F_2$, does not occur. It is the empty cell. For this reason, any number of varieties and of features may

Table 5: Linear array for two features.

Varieties:	V_1	V_2	V_3
Features:	$+F_1$	$-F_1$, $+F_2$	$-F_2$

arranged in a single linear series, provided that each additional feature implies an empty cell. For example, Table 6 arrays eighteen informants in seven order classes on the basis of six features. This array therefore approaches a continuum, a continuous spectrum of usage ranging from the

Table 6: Linear array approaching a continuum.

Speakers:	3, 2, 7, 15	9, 6, 13	4, 8, 14, 16	1, 5, 17	11, 18	10	12
Features:	$+F_1$	$-F_1$ $+F_2$	$-F_2$ $+F_3$	$-F_3$ $+F_4$	$-F_4$ $+F_5$	$-F_5$ $+F_6$	$-F_6$

extreme of all features marked plus to that of all features marked minus. That informants 1, 5, and 17 are all minus features 1, 2, and 3, and all plus features 4, 5, and 6 is a categorical fact, one that has been established without reference to non-linguistic data.

Thus implicational analysis permits us to establish a speech continuum, a hierarchy of varieties based entirely on the cooccurrences of features, and also a hierarchy of features based entirely on the similarities and differences of varieties in their use of these features. Because non-linguistic data (age, sex, socio-economic status, etc.) have not been used in establishing these hierarchies, such data can now be correlated to the continuum without circularity of argument.

Implicational scales are self-screening. Any feature which does not belong in a given implicational series is immediately apparent, for there is no other feature in that series with which it can combine to yield an empty cell.[2] Features can be assigned to a given scale without knowing that it is a scale correlating with formality of style, for example, or with extent of education. If the feature fits the scale (i.e., if it yields the empty cell), then it belongs there, even if we don't know why. Here Labov objects, demanding that an implicational scale be "more than an empirical accident". The chances against a feature fitting into a long and complex series purely by accident are overwhelming, however, and I would continue searching for the relevance of an apparently maverick feature rather than expelling it from the scale.

An implicational scale may be thought of as a linear schema of binary features, for the specification of the coefficient of the one feature which serves as cutting point for the scale makes predictable the coefficients of all other features for that variety. When making a stylistic shift, the speaker merely adjusts the setting on the two or three scales relevant to the stylistic shift, setting the cutting points at those crucial positions which have resulted in social success in his past experience. The scales then automatically generate all the code switches, the features necessary to the generation of a sociolinguistically appropriate sentence. Note that a whole new dimension of explanatory power is thus given to a grammar without increasing its complexity. Implicational scales are not a new component added to a grammar; they are only an extension of the redundancy rules and hierarchies of features which have been a part of the standard linguistic model ever since Aspects. For the theoretical linguist , this is a real advantage over frequency models such as

Labov's, which add a new element of probability to the rules and thus question the entire distinction between competence and performance. For the sociolinguist there is an additional advantage: implicational analysis enables us to correlate socio-economic and other contextual data to linguistic variation, continuously and without circularity of argument.

4. Continuous vs. discrete categories.

There is no theory of sociology or of anthropology in the sense that there is a theory of chemistry or a theory of linguistics. Most so-called theories of anthropology are only metaphoric extensions of linguistic theories (e.g., Pike, Levi-Strauss, Buchler, et al.). The sociologists have given us vastly improved techniques of empirical observation, especially the observation of group behavior, but we have yet to see a formal and explicit theory of society which is applicable to more than one special aspect of society (e.g., land tenure, kinship). Clear binary decisions are possible in linguistics, usually not so in sociology or anthropology. In the data presented in Table 1 (above) there was presumably no doubt whether a given utterance by a given informant was r-less or r-ful. There could be considerable doubt, however, as to whether a given informant was really of Upper Middle Class or of Lower Middle Class, and especially whether this informant, at the moment he uttered that particular utterance, was speaking in a non-verbal context that was representative of Upper Middle Class behavior.

Many of the data of sociology are continuous (e.g., age, income, education) and can be treated as discrete categories only by imposing arbitrary lumping devices, which sort ages into ten-year steps, and income into thousand-dollar brackets. A culture can indeed impose partial structuring on a continuous category, as, for example, our own culture's giving special significance to certain ages: age twelve when one must begin paying full admission price, age eighteen when he may be drafted, age twenty-one when he can vote and buy beer, age forty when life is supposed to begin. Most analyses involving correlation with age, however, arbitrarily bracket it into five year groups or decades. Most linguistic data, on the other hand, are relatively discrete. We are normally certain whether a given utterance is r-less or r-ful, whether it contains isn't or ain't, etc. Why then do sociolinguists insist on presenting frequency analyses in which the linguistic data are treated as continuous variables, and the socio-economic data are treated as discrete categories?

Consider the following absurd research proposal: "Let's do a linguistic atlas of the United States and Canada, and let's use state and provincial boundaries as our grid. That is, we'll interview a suitable sample of speakers from each state and province with each informant representing his state or province as a whole. Then we'll be able to make frequency statements about inter-state differences. For example, the frequency of the word pail (as opposed to bucket) might be more than fifty percentage points higher in Massachusetts than in Texas."

The absurdity of this proposal is obvious. We don't care about Massachusetts or Texas as a whole. We want to know in which communities everyone says pail, in which ones everyone says bucket, and in which ones there is divided usage. Therefore we select our informants to be representative of their own communities, not of the entire state. The average depth of the Pacific Ocean as opposed to the Atlantic is normally not a very useful piece of information to a navigator.

Return for a moment to Wolfram's data in Table 1. If we knew the sampling on which this table was based, we could convert it to a linguistically oriented table. Assume that the sample consisted of 400 speakers, 100 for each of the four social classes. Then as shown in Table 7, 192 of the 400 would be r-deletors, of whom 21/192nds (or 10.9 percent) would be of upper middle class, 20.3 percent of lower middle class, 31.5 percent of upper working class, and 37.0 percent of lower working class. This table, indicating the frequency of class affiliations for the two discrete linguistic groups (r-deletors and r-retainers) is at least as meaningful as the original Table 1. It could be much more meaningful if we had access to the non-linguistic raw data, the socio-economic data which caused a given informant to be thrown into the UM class rather than LM, etc., for we could then treat these as continuous variables.

Table 7: Table 1 recast with classes as variables (assuming that the sample consisted of 100 in each of the four social classes).

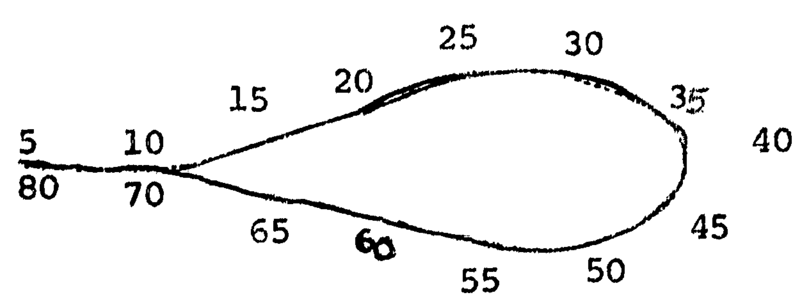
	Total		UM		LM		UW		LW		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	%
r-deletion	192	48	21	10.9	39	20.3	61	31.5	71	37.0	100
r-retention	208	52	79	38.0	61	29.3	39	18.7	29	13.9	100

The linguistic features in an implicational array have been structured with no reference to non-linguistic data. Consequently we can treat them as fixed categories and treat the socio-economic data as continuously variable. There is no longer any need to impose arbitrary bracketing on age, income, education, etc. We no longer need to make such circular statements as "Most south-midlanders tend to speak south-midland dialect."

5. Linearity and sociolinguistics.

I suggest that most, perhaps all, sociolinguistic variables belong to one or more implicational scales, and that each scale is a linear generative device. The number of such scales must be small enough for the speaker to manage in addition to the other demands on his attention while speaking. A linear device is not necessarily a straight line: a scale might be looped if its extremes approach the same value. For example, the very old and the very young have much in common linguistically. A scale such as that in Figure 1 indicates that children of age 10 and adults

Figure 1.



of age 70 have identical coefficients for at least one feature.

Two scales intersect if one or more features appear in both scales. Figure 2 indicates that features F_1, F_2, F_3, F_4 are included in both the socio-economic scale and also the scale of isolation (i.e., distance from an urban center), but feature F_5 belongs only to the socio-economic scale, and feature F_6 belongs only to the isolation scale.

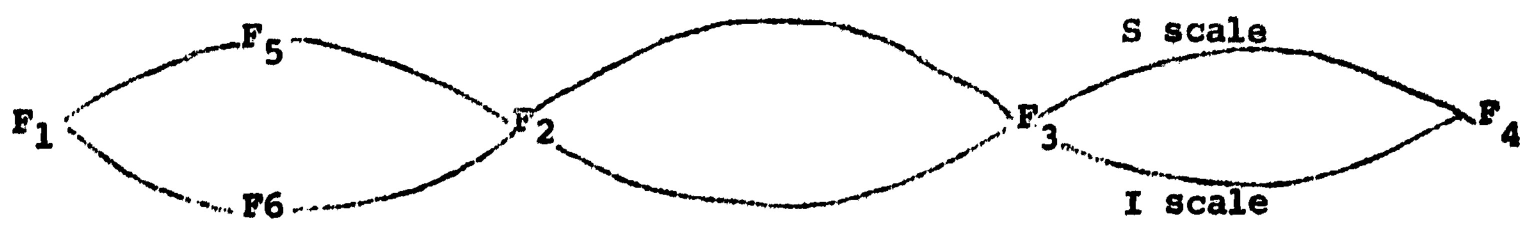


Figure 2.

I have assumed that the idealized speaker competence includes the entire range of all such scales; i.e., that he can produce and recognize every variety of his language. A description of performance, however, would have to acknowledge that real speakers differ in their degree of mastering these scales (e.g., a labor leader or a dialect comedian would command a greater range than would a housewife), that a real speaker can produce only a part of the total range of varieties, and that he may not even recognize some parts of the scales.

There is evidence that listeners generalize a scale on the basis of fragmentary evidence (probably including certain expectations based on non-linguistic evidence such as race, clothing, etc.) and that the resulting stereotype is not shaken by counter examples. That is, a listener leaps to certain conclusions on the basis of a few salient features: "little-old" and "honey-chile" for the southerner, switching the vowels for curl and coil for a Brooklynite, gutteral consonants for a German accent, nasalized vowels and front-rounded vowels for French. He then associates these with stereotype responses: Germans are savage barbarians, Frenchmen are effeminate decadents, black people are lazy and stupid. The listener may then simply stop listening for further clues which would enable him to construct a more complete and accurate scale.

Scott Baird (1968) investigated listener reactions to tapes of employment interview speech in which the occurrences of so-called "Negro" features of pronunciation, *e.g.*, [do:] for *door*, were carefully controlled. Although listener subjects identified these features as characteristic of black English, they did not differ in listener reaction between taped interviews containing one feature and those containing another, not even between those containing all the controlled features and those containing none of them. As soon as a subject heard one characteristic (no matter how minor) which seemed to indicate that the speaker was black, he simply stopped listening sociolinguistically and gave a stereotype response - a semantic differential which reflected the old clichés about the black man: loyal, lazy, kindly, stupid, etc. In linguistic performance, sounding a little bit black was as impossible as being a little bit pregnant.

Other studies have attempted to verify implicational scales by determining listener reactions to violations of a scale, *i.e.*, sociolinguistically ungrammatical sentences. For example, Mary Anne Thorpe (1969) has studied reactions to stylistically anomalous sentences such as "Darling, I cathect you with all my heart!" and "The bishop went home to his pad." It appears that those features to which speakers really react are a proper subset of those features which consititute the relevant implicational scales, just as the features of a stage dialect are a proper subset of the features of a real dialect.

Until now I have been discussing the linearity of those implicational scales which are covariable with data which are themselves linear: age, income, education, formality, etc. Geographical dialects, I contend, can also be represented by linear implication scales. The familiar two-dimensional dialect map is only a presentational device for linguistic data. The real interest of the dialectologist is in questions like the following: (1) How far has an innovation diffused from a central focal point? (2) To what extent have mountains, rivers, etc., provided a channel which has facilitated such diffusion? (4) To what extent has the cultural, economic, and political dominance of community A over community B conditioned linguistic diffusion from A to B? (5) In what areas are isoglosses bundled, closely spaced, or widely spaced? (6) Which isoglosses mark major dialect boundaries, and which mark only the boundaries of subdialects? These are all questions about linear distribution, not two dimensional areal distribution. The extent of acceptance of a linguistic innovation is a function of linear distance from a cultural center; in fact, it was Robert Redfield's ideal-types analysis of Yucatán culture that first suggested the idea to me of implicational scales. The extent of diffusion is also a function of density of communication, which in turn is dependent on roads, rivers, mountains, etc. The direction of diffusion is dependent on relative cultural status, again a simple linear function.

A transition area marked by parallel isoglosses may be directly converted to a linear implicational scale simply by laying down a line perpendicular to the parallel isoglosses and reading off the values at different points along this line. The relative closeness of isoglosses (including bundling as the extreme case) can, of course, be represented cartographically, as one might read the contour lines on a map. More meaningful, however, would be the varying slope of a line at right angles to the parallel isoglosses. William Womble (1951) has developed a methodology for synthesizing multiple measurements of this kind, based on the slope of all possible perpendiculars to contour lines. Thus in Figure 3 the slope of line AC is greater than that of line DE; the slope of line AC is greater between A and B than between B and C. Slope may be thought of literally as the steepness of a mountainside, represented on a contour map as differing degrees of "blackness" for the steeper the slope the more closely crowded together are the contour lines.

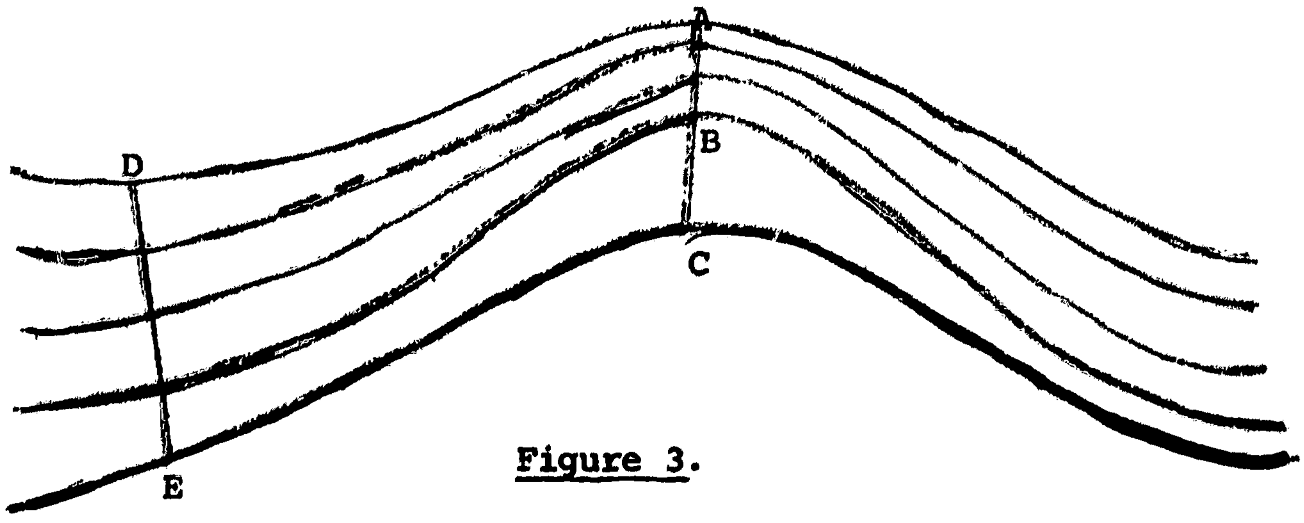


Figure 3.

In Womble's "differential systematics", it is not the contours themselves which are mapped; these are relatively uninteresting and tend to cancel each other out. Rather it is the degree of slope which is differentially mapped, ranging from areas of abrupt boundary transition (e.g., a bundle of isoglosses), through varying degrees of sharpness of transition, to level areas characterized by linguistic uniformity.

Ferdinand Wrede informally anticipated Womble by his use of an effective cartographic technique in the Deutscher Sprachatlas.

Realizing that 49,363 symbols, one for each community surveyed, were far far too many to include on any meaningful map, Wrede drew "isoglosses" through what seemed impressionistically to be the heart of transition areas, indicated the normal (i.e., most frequent) form found in each area so demarcated by his lines, and then entered symbols for all and only the exceptions. Wrede's lines thus divide the country into regions, each of which is characterized by a nearly "white" center (nearly free of symbols marking exceptions). As one approaches the border of a region, however, the map becomes increasingly black as the number of symbols representing exceptions approaches fifty percent of all communities surveyed. Wrede's map, like Womble's, maps not the individual contours, but rather the shape (i.e., the varying degree of slope) of all the linear implicational scales which generate the dialect distribution.

The function of a television camera is to receive a multi-dimensional image (height, width, and color) and to convert it into a single linear series of electrical impulses. The function of a television receiver is to convert these impulses back into a multi-dimensional image. Similarly the function of the transformational and phonological components of a grammar is to take a multi-dimensional deep structure (left-right order, dominance relation, feature specification) and to convert it into a single linear series of acoustic events. Linear representation of complex events is thus basic to the very idea of language. The linearity of the implicational scales which control sociolinguistic variation is therefore not surprising.

FOOTNOTES

[1] Implicational scales were first used by Louis Guttman in 1944. Unaware of Guttman's work, I independently developed the concept in 1958 and was the first to apply it to linguistic data. For further information, see Torgerson 1957; Stolz and Bills 1968; Bailey 1969.

[2] In fact, these cells are not totally empty, for there are always a few deviant speakers. The number is always so small if the feature really belongs in the scale, however, that the odds against pure chance are overwhelming. See Torgerson 1947; Stolz and Bills 1968.

REFERENCES

BAILEY, Charles-James N., 1969. The integration of linguistic theory: internal reconstruction and the comparative method in descriptive linguistics. Unpublished.

BAIRD, Scott James, 1969. Employment interview speech: A social dialect study in Austin, Texas. University of Texas dissertation. Unpublished.

DeCAMP, David, 1969. Is a sociolinguistic theory possible? Unpublished.

FASOLD, Ralph W., 1969. Three models for dealing with socially significant linguistic variation. Unpublished.

LABCV, William, 1969. The study of language in its social context. Unpublished.

PRIDEAUX, Gary, 1966. Syntax of Japanese honorifics. University of Texas dissertation. Unpublished.

REDFIELD, Robert, 1941. The folk culture of Yucatan. Chicago: University of Chicago Press.

STOLZ, Walter, and Garland Bills, 1968. An investigation of the standard-nonstandard dimension of Central Texas English. Unpublished.

THORPE, Mary Anne, 1969. Socio-linguistic constraints in generative grammar. Unpublished.

TORGERSON, Warren, 1957. Theory and methods of scaling. New York, Wiley.

WOLFRAM, Walter A., 1969. A sociolinguistic description of Detroit Negro speech. Washington, D.C., Center for Applied Linguistics.

WOMBLE, William H. 1951. Differential systematics. Science 114: 315-22.