# *Phonological Correlates of Social Stratification*

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## INTRODUCTION

AS WE approach the study of language in its social context, it seems that by the very same steps we enter the study of small differences in language behavior. For many years, the structural analysis of sound systems has enjoyed, and profited by, a kind of bold abstraction from such differences. Small differences within a system have been explained away as "free variation" or "social variants," and we have concentrated on the abstract organization of constant features. But to understand the dynamics of such systems, the mechanism of their evolution, and their role in community life, it is useful to reverse this attitude. If a feature of language is constant from place to place and speaker to speaker, the fact will then appear to us pale and uninteresting. But the moment we hear a difference between two speakers or two speeches, our interest is quickened. Does the difference recur? Is it generalized in any context or social group? Does it have social meaning? As we turn from the study of linguistic constants to linguistic variables, we acquire more realistic methods of comparing systems and measuring differences between structures. Moreover, as we develop quantitative methods, correlations between linguistic patterns and other cultural patterns begin to emerge.

The important word here is *quantitative.* As naive and native speakers of a particular region and generation, we all receive a great deal of qualitative information from small differences in the speech of others. The linguist's task is to construct quantitative measures by which such information becomes a precise medium for comparison and further abstract manipulation.

There is an element of paradox in this emphasis on quantitative procedures. One of the undisputed achievements of structural linguistics was the analysis of various continuous dimensions into qualitative units, conceived as absolutely different from one another, bounded by sudden transitions in terms of binary choices. This model was a successful representation of a synchronic structure with only one function: that of cognitive communication. Its limitations have become increasingly apparent as linguists begin to analyze the many functions of language in the context of the speech community (Hymes 1962.). Further questions are raised by the search for the origins and dynamics of linguistic change: in several empirical studies it has been possible to outline a detailed quantitative structure which lies below the level of the quantitative functional unit.

In a previous study of the speech of the island of Martha's Vineyard (Labov 1963), a numerical index was constructed to measure a complex distribution of small differences in the diphthongs /ai/ and /au/. The linguistic pat-

terns were then correlated with patterns of social forces, and from this juxtaposition there emerged a unified social motivation for the sound change under study.

As this line of attack was pursued in the urban core of New York City, a pattern of social stratification was encountered which cut across all other forms of social differentiation. One would expect that this pervasive social pattern would be reflected in a number of linguistic variables; the social significance of these variables for the members of the speech community would be indicated by correlations with objective indicators of class stratification. In this case, the analysis of social variation in language was not an adjunct to the analysis of the phonological system of functional units, but rather a necessary preliminary to an adequate analysis. In New York City, the speech of most individuals shows a great many oscillations and fluctuations, seemingly in defiance of the need for a coherent linguistic system for rational communication; but when this behavior is placed in the context of the structure of stylistic and social variation characteristic of the community, it appears as part of a highly determined system.

## THE SURVEY OF THE LOWER EAST SIDE

The data for this discussion will be drawn from a completed study of the social stratification of English in New York City (Labov 1964), and particularly a survey of the Lower East Side conducted by the author with the assistance of Mr. Michael Kac of Haverford College. This section of New York City was the focus of a sociological survey undertaken in 1961 as a preliminary to the Mobilization for Youth Program. Through the cooperation of Mobilization for Youth and the New York School of Social Work, it was possible to use the sample already constructed as a base for the linguistic survey.[1] The linguists were thus relieved of the difficult tasks involved in the enumeration of 33,000 dwelling units, the construction of a random sample of 100,000 residents, the determination of comparative social status, and the exploration of social aspirations and attitudes. Furthermore, our secondary survey had a great advantage in efficiency, in that we were able to construct a stratified sample of only those sections of the population with which we were immediately concerned—the adult native speakers of English who had lived in the area two years or more. Since the socio-economic, racial, and ethnic composition of the population was already known in detail, it was possible to draw the minimum number of subjects from each subgroup which would yield an adequate characterization of the linguistic habits peculiar to that subgroup.[2]

The relative socio-economic status of the individuals who were interviewed had been determined from the completed sociological survey by an objective index of productive characteristics constructed by Mobilization for Youth (Michael 1962). This index combined three indicators: occupation [of the breadwinner], education [of the informant[3]], and a family income figure. Detailed correlations of the individual indicators with linguistic behavior showed that no single indicator was as closely correlated with linguistic variables as the

combined index of three indicators.[4] This finding lends confirmation to the linear nature of the socio-economic index, and suggests that the abstraction of *class status* is indeed required for an adequate analysis of social and linguistic behavior.

The socio-economic index divided the population into ten classes, from 0 to 9. Linguistic and social patterns agreed generally in the division of this scale into four class groups, which may be informally labelled: 0-1, lower class; 2-5, working class; 6-8, lower middle class; 9, upper middle class. (Classes 2 and 5 are marginal groups, sometimes following the behavior of the lower and lower middle class respectively.)

The target sample for the linguistic survey consisted of 195 adult native speakers of English who had remained in the Lower East Side from 1961 to 1963. Eighty-one per cent of this target sample was reached for information on linguistic behavior. Complete linguistic interviews, in tape recorded sessions lasting from an hour to an hour and a half, were conducted with 122 informants. The data to be given here represent the speech of 81 informants who were raised in New York City;[5] the data for the one-third of the sample who were not native New Yorkers provide a valuable base for distinguishing those linguistic structures which are peculiar to New York City from those characteristic of the Eastern United States as a whole, but this material will not be presented here.

## SELECTION OF THE LINGUISTIC VARIABLES

There are four principal criteria which are used in selecting a linguistic variable for quantitative study. For the greatest utility in an investigation of this type, the variable should be high in *frequency;* have a certain *immunity from conscious suppression;*[6] be an integral *unit of a larger structure;* and be easily *quantified on a linear scale.* All of these criteria point to segmental phonological features as the most useful, and we rely upon them for our main quantitative work.[7]

Five main phonological variables were used in the survey of the Lower East Side. In the following discussion, a phonological variable will be indicated in parentheses, e.g., (r), as opposed to the phonemic unit /r/ or the phonetic unit [r]. The individual values of the phonological variable may cover a wide range of phonemic and phonetic units: they are indicated by figures within the parentheses, e.g., (r-1). Average index scores for an individual or a group are shown by figures outside the parentheses, e. g., (r)-22.

The five phonological variables are: (r), registering the presence or absence of final and preconsonantal /r/; (eh), indicating the height of the vowel in the word class of *bad, ask, half, dance* [as opposed to *bat, back lap*]; (oh), indicating the height of the vowel in the word class of *off, chocolate, all;* (th), the realization of the first consonant of *thing, thought, three,* as stop, affricate, or fricative; and (dh), a corresponding index for the voiced initial consonant of *then, this, the,* etc. The discussion to be presented here will concern (r), (eh), and (th).

## THE ISOLATION OF CONTEXTUAL STYLES

The phonological variables listed above are especially useful because they show both interpersonal and intrapersonal variation. In the speech of the great majority of New Yorkers, these variables follow a pattern of continuous and regular variation through different styles and contexts. This is a major opportunity and yet a major problem. We can profit from this variation to learn more about the structure of language than we would in other regions, like Martha's Vineyard, where most speakers have only one style. But first we must control the context and define the styles of speech which occur within these contexts.

To study social stratification, we need random sampling. To complete random sampling, we need structured, formal interviews. Yet formal interviews define a speech context in which normally only one speaking style occurs: careful speech. The bulk of the informant's speech production at other times may be quite different. We can hear this casual speech on the streets, in restaurants, at Coney Island. Yet anonymous observations in these contexts will also be biased. These are special groups—that hang around street corners, go to Coney Island, or talk loud enough in public places to be overheard. The interview remains an indispensable tool for an accurate cross section of the entire population. What then can be accomplished within the bounds of the interview?

First, we can measure linguistic range by shifting context and style from careful speech in the direction of more formal behavior. We give the informant standard texts in which the variables are concentrated, and record his reading style. Next, we give him lists of isolated words, which follow patterns of phonetic alternation, or ask him to pronounce consciously certain minimal pairs which he has just pronounced unconsciously in the reading. This procedure yields two additional speech styles of increasing formality. But we cannot rest content until we somehow open a window on that every-day speech in which the citizen scolds his children, jokes with his friends, and orders a slice of apple pie. It is the familiar problem of whether the light is on or off when the refrigerator door is closed.

To solve this problem, we must construct interview situations in which casual speech will find a place, or permit spontaneous speech to emerge, and then set up a formal method for defining occurrences of these styles. By *casual speech* I mean the normal speech used in informal situations, where no attention is directed to language; by *spontaneous speech,* I mean a pattern used in excited, emotionally charged speech when the constraints of a formal situation are discharged. Both of these styles share the feature of a reduction in audio-monitoring so that speakers are less able to preserve an acquired prestige pattern at the expense of an earlier, motor-controlled native sound production. In our results, spontaneous and casual patterns are equivalent, and they will be discussed jointly here as casual speech.

We acknowledge the presence of casual speech when at least one of five contextual situations prevail, and also at least one of five nonphonological chan-

nel cues. The contextual situations are: speech outside the formal interview, discussion with a third person, remarks or monologues not in direct response to questions, and two topics within the interview itself. One of these topics is a discussion of childhood rhymes and customs; spontaneous speech is normal in

> My mother, your mother lives across the way,
> Two-fourteen East Broadway,
> Every night they have a fight
> And this is what they say . . .

A later section of the interview leads up to the question, "Have you ever been in a situation where you thought you were in serious danger of being killed, where you thought, 'this is it'?" If the answer is "yes," we ask, "What happened?" There is a psychological pressure to prove that this was a real, not an imagined danger, and the speaker often becomes involved in his narrative to the extent that his attention is entirely focused on this re-enactment of the past.

When speech occurs in one of these five situations, we look for one of five channel cues: changes in tempo, pitch, or volume; laughter; or changes in breathing. If at least one of these occurs, the variables in this section are tabulated under *casual* speech.

In tabulating even a few interviews, it becomes apparent that these formal definitions correspond to some regular patterns of alternation characteristic of New Yorkers. One middle class speaker, for example, uses 19 per cent /r/ in final and preconsonantal position. In casual speech, his usage drops to 00 per cent. In the other direction, he increases to 24 per cent in reading style, and jumps to 53 per cent /r/ in isolated word lists. An upper middle class speaker may follow the same pattern at a higher level, or a working class speaker at a lower level. For example:

(r)

| *3 Individuals* | *Casual speech* | *Careful speech* | *Reading style* | *Word lists* |
|---|---|---|---|---|
| Upper middle class | 69 | 85 | 96 | 100 |
| Middle class | 00 | 19 | 24 | 53 |
| Working class | 00 | 05 | 14 | 29 |

Almost any small section of our population shows this typical two-way stratification, following a hierarchy of styles and a hierarchy of social status. One can therefore turn to the data from the group of 81 speakers with every expectation that it represents the habits of the population as a whole.

## CLASS STRATIFICATION OF (th)

The first variable to be considered here is (th), the realization of the voiceless initial consonant in *thing, through,* etc. This variable is not at all peculiar to New York City: its social significance is roughly the same in most areas of the United States. A phonological index is used to codify this variable using three particular values: (th-1), the fricative form [ʘ]; (th-2), the affricate [tʘ]; and (th-3), the lenis stop [t]. If the informant uses only the fricative

form (th-1) in a particular stylistic context, his average index score for that context is (th)-00. One point is assigned for each occurrence of (th-2), and two points for each occurrence of (th-3); the total number of points, divided by the total number of occurrences of the variable, and multiplied by 100 yields the (th) index score. Thus consistent use of the stop form would be assigned a score of (th)-200. No native New Yorker uses only stops or affricates: this feature is a true variable for all but a few informants who used only the prestige form.

Figure 1 shows the class stratification of (th), for the 81 native New York informants, in four contextual styles. The vertical axis represents average (th) index scores. Along the horizontal axis are shown contextual styles, from the most informal at the left to the most formal at the right. At A are the values for casual speech; B, careful speech; C, reading style; and D, the pronunciation of isolated words. The average index scores for each of five class groups are plotted for each contextual style, and the values for each class group connected along straight lines. At the bottom of the diagram, the upper middle class shows av-

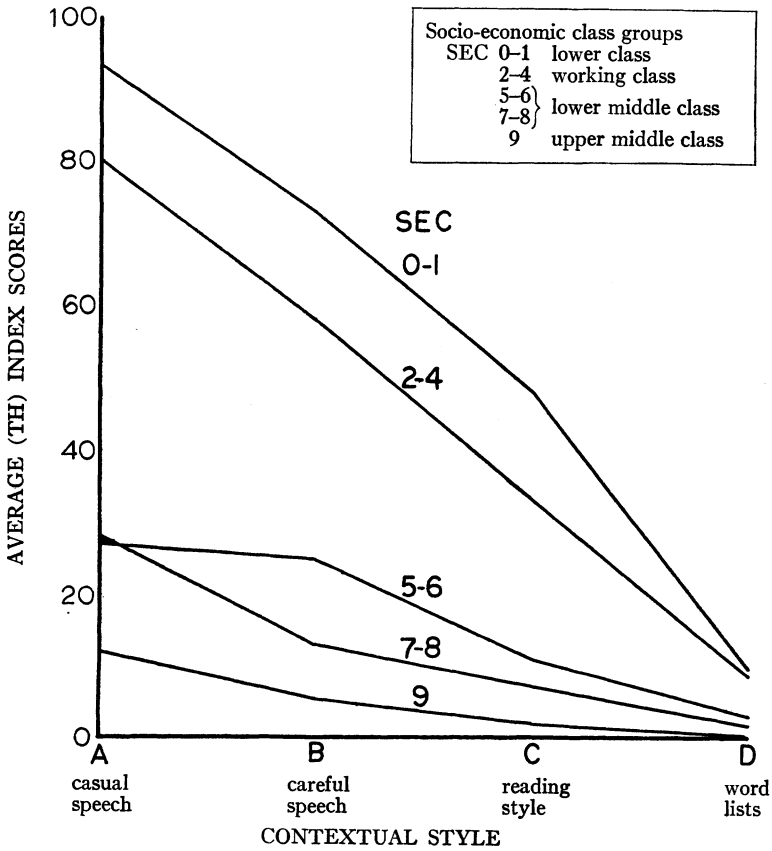


FIG. 1. Class stratification diagram for (th).

erage scores very close to zero in all four styles: this group departs very little from the prestige standard used by radio and television announcers. The second-ranking status group, the lower middle class, is shown here divided into two halves which use the same amount of stops and affricates in everyday speech, but diverge in their ability to approximate the prestige standard in more careful speech. All of the middle class subgroups are divided by a wide margin from the usage shown by the two lower classes. The working class group, representing mainly employed manual workers, shows a (th) score of 70 in casual speech, and shows a marked decline only in reading style and isolated words. The highest values of all are shown by the lowest ranking class group; the lower class is a very mixed set of individuals, many permanently unemployed, from broken homes, with little education.

The pattern shown by this diagram we may call *sharp stratification,* in that the population is divided into two radically different sections by their use of the (th) variable. A similar pattern may be derived from a tabulation of the voiced counterpart, (dh). The regularity of the pattern is a striking feature: the detailed class stratification found in casual speech is repeated and confirmed by the values found in the three successively more formal styles. Similarly, the pattern of stylistic stratification followed by the upper middle class is repeated and confirmed by the stylistic stratification followed by four other class groups. This array of regular relations has a self-confirming, self-governing property which is characteristic of linguistic systems where *"tout se tient."* In a regular structure of this type, any given datum might be replaced if missing within narrow limits, since its value is determined by the values of all neighboring points. It is difficult to conceive of any nonlinguistic cultural measure which would provide an equally complex set of quantitative relations with other forms of social behavior.

## CLASS STRATIFICATION OF (r)

The next variable to be considered is of a radically different type. Whereas (th) is a linguistic variable with a stable social history, common to large parts of the United States, the variable (r) is involved in a rapid linguistic change which is especially characteristic of New York City. The traditional pattern of New York City speech, as described by Babbitt (1896), Frank (1948), Hubbell (1950), and Kurath and McDavid (1961), was consistently "*r*-less": that is, the phoneme /r/ did not appear in final or preconsonantal position. In this pattern, *god* is homonymous with *guard, sauce* with *source, bad* with *bared.* The prestige pronunciation which was superimposed upon this pattern was heavily influenced by Eastern New England and British speech, and was also *r*-less. In recent decades, a new prestige pattern has been superimposed upon the speech of the city, based upon an *r*-pronouncing dialect characteristic of other Northern regions outside of Eastern New England. This has replaced the earlier prestige pattern almost completely in the speech of our informants. Figure 2 shows the class stratification of (r) which has resulted from the importation of the *r*-pronouncing prestige pattern. The vertical axis represents average index scores for

(r): these scores are the percentages of all words with historical (or orthographic) *r* in final and preconsonantal position, in which the speakers used some form of constricted, consonantal /r/.[8] The horizontal axis shows the series of contextual styles, ranging from the most informal at the left to the most formal at the right. At the extreme right we have one additional style, D′: this is the subcategory of isolated word lists in which the full attention of the informant is directed to (r), in such minimal pairs as *dock* vs. *dark, god* vs. *guard, sauce* vs. *source*. (The use of (r) in such pairs as *nearer* vs. *mirror* is not included in D′, but is included in D.)

In Figure 2, the population has been divided into six distinct class groups, and the values of the index scores for (r) are plotted for each group in each contextual style. On the whole, this pattern may be described as *fine stratification*, since it appears that the class continuum may be divided into as many small units as the size of the sample will allow, and correlated accordingly with the use of (r).

At the extreme left, Style A, only the highest ranking status group shows a

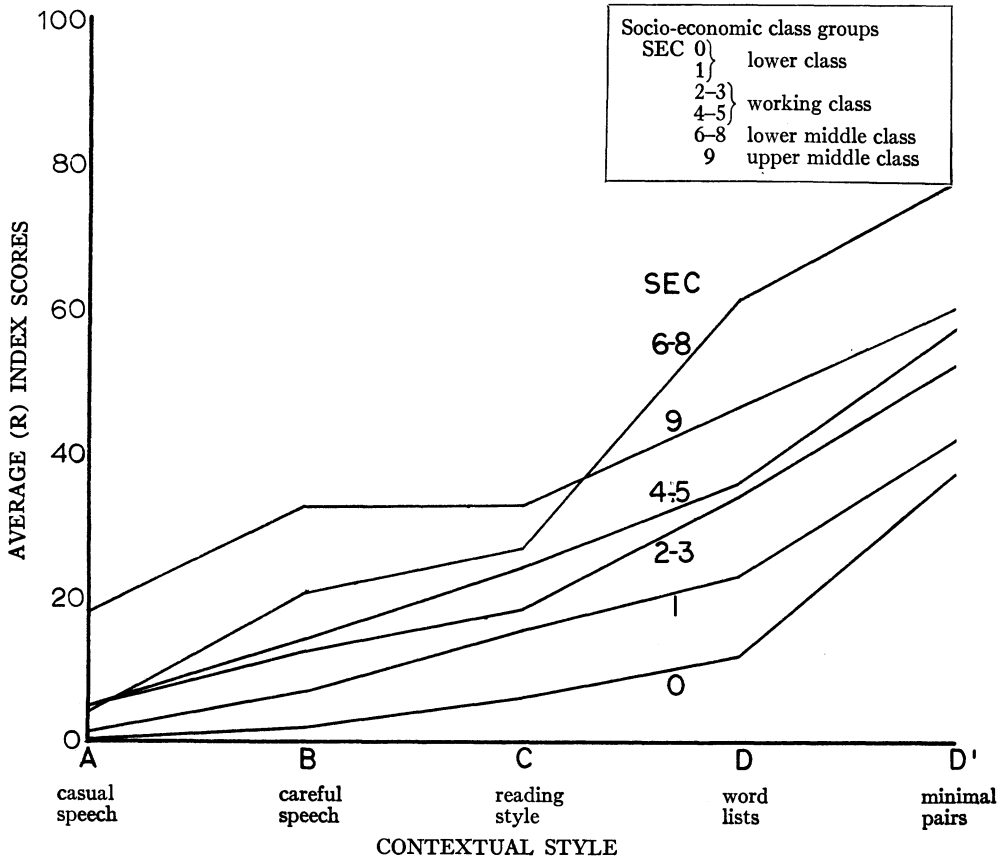


FIG. 2. Class stratification diagram for (r).

significant amount of *r*-pronunciation. In other words, in everyday speech, (r) functions as a prestige marker of the upper middle class alone. However, in successively more formal styles, the (r) indexes for the other groups rise more steeply than that for class 9. In particular, the behavior of the lower middle class, group 6-8, shows an extremely sharp increase in (r). Whereas this group is essentially *r*-less in everyday speech, it shows an average (r) index for the two most formal styles which is considerably greater than that of the upper middle class, reaching almost 80 per cent of maximum. This crossover pattern appears at first sight as a deviation from the regular correlation of linguistic and social behavior. However, a similar crossover appears in several other class stratification diagrams—in fact, for all those which are involved in processes of linguistic change.

Figure 3, for example, is the class stratification diagram for the variable (eh). This variable concerns the height of the vowel in *bad, dance, ask, half,* etc.—words which in other dialects contain a short low front vowel /æ/. The variable (eh) is identified in that subcategory of words containing the diaphoneme /æ/ which are monosyllabic morphemes ending in voiced stops, voiceless fricatives, and nasals /m/ and /n/, and the derivatives of these words. The index is constructed from the following scale of height:

| | *phonetically* | *level with the vowel of* |
|---|---|---|
| (eh-1) | [ɪ:ə, ɪ̟:ː, e$^{\perp}$:ə] | *beer* |
| (eh-2) | [ɛ:ə, e:ə] | *bear* |
| (eh-3) | [æ$^{\perp}$] | |
| (eh-4) | [æ:] | *bat* |
| (eh-5) | [a$^{\dashv}$:] | Eastern New England *ask* |

The index score is computed by taking the average value of all occurrences of (eh), and multiplying by 10. In Figure 3, the vertical axis represents average (eh) scores, and the horizontal axis, the series of contextual styles. Here again, we see a regular correlation of linguistic behavior with class stratification, with the lower middle class group 6-8 crossing over the upper middle class in the most formal style.

In Figure 3, it may be seen that the upper middle class reverses the direction of phonological shift in most formal style, moving back in the direction of (eh)-30 for the isolated word list *bat, bad, back, bag, batch, badge, bath,* etc. This retrograde movement is accounted for by the presence of a certain number of upper-middle-class informants who are able to maintain the intermediate allophone of (eh-3), the raised [æ$^{\perp}$]. This is the characteristic form of the older prestige pronunciation, and also of the college-educated *r*-pronouncing speakers who enter the city from other northern regions. However, for the majority of speakers who were raised in New York City, there is no intermediate allophone between (eh-2) [ɛ:ə], level with *where* and *bear,* and (eh-4), [æ:], a lengthened and tense form of the vowel in *bat.* Whereas many upper-middle-class speakers [but not all] aim at (eh-3), all lower-middle-class speakers are governed by the norm of (eh-4); as Figure 3 shows, this group comes very close to consistent

(eh-4) pronunciation. Oscillations which do occur in Style D for lower-middle-class speakers are always (eh-1) or (eh-2), that is, [bæt, bæ:d, bæk, bæ:g, bætš, bɛ:ədž, bæ:θ. . .]

The shibboleth of (eh) is even more prominent in the pronunciation of working-class speakers, though they show less consistency in achieving the norm of (eh-4). Indeed, it may be said that the pronunciation of (eh) is the one phonological variable that is uppermost for those working-class speakers who are striving for careful, correct speech.

## OTHER LINGUISTIC VARIABLES

The linguistic structures which have been illustrated by the three variables discussed are similar to those seen in the tabulations of other variables, such as (dh) and (oh). In the case of (oh), we have a curvilinear pattern, since the lower class and the upper middle class share the same average values, while the two central class groups show the most extreme values in casual speech. The lower class does not participate in either social or stylistic patterns of variation

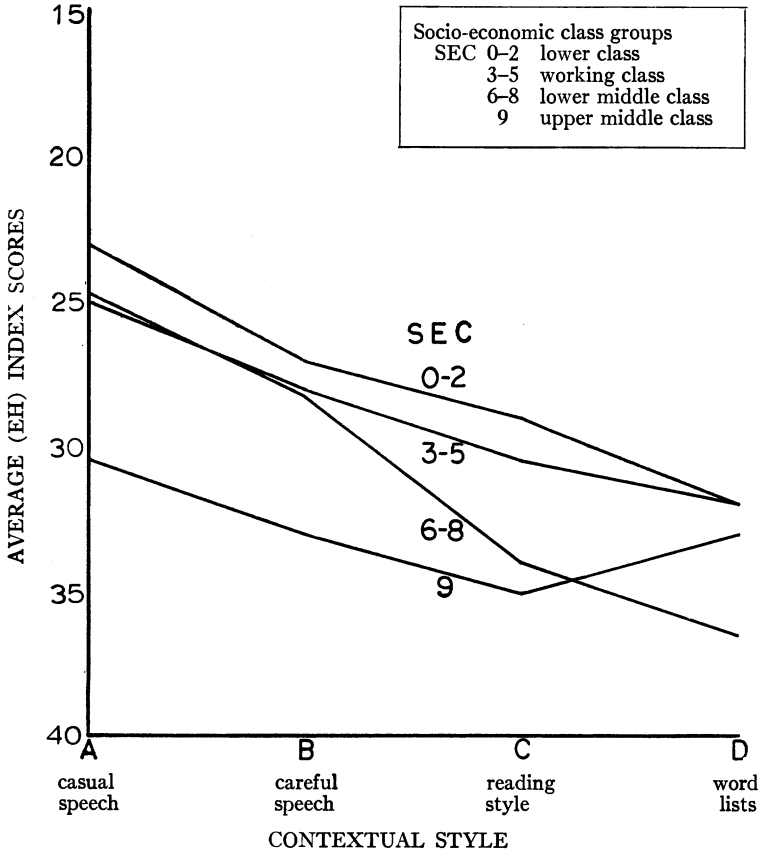


FIG. 3. Class stratification diagram for (eh).

for this variable; (oh) has not, as yet, attained any social significance for this group. There are also phonological variables which show only social variation, but not stylistic variation for the population as a whole: that is, they have not yet become the objects of overt social affect. The vowels of *my* and *mouth* fall into this category. These interpersonal variables have near-constant values in the speech of given individuals, but group averages show sharp social stratification in response to a larger, underlying process which continues to differentiate the speech of the different strata.

The data given above is limited to the measurement of objective usage of the phonological variables. It is also necessary to explore the subjective evaluation of these features, and to isolate the subjective, unconscious reactions to individual phonological variables. In other studies, derived from the survey of the Lower East Side, it has been possible to determine whether these variables actually serve as indexes that enable the average New Yorker to identify the class position of other New Yorkers, within a reasonable range of error. More importantly, it appears that the great diversity in the use of the variables is matched by an extraordinary unanimity in subjective evaluation which defines New York City as a single speech community.

## LINGUISTIC CORRELATES OF ETHNIC STRATIFICATION

In New York City, racial and ethnic groups play an important part in the dynamics of social change, and one would expect that their influence would be reflected in linguistic behavior. The opposition of Jewish and Italian groups among our informants is reflected in a long series of parallel and opposing treatments of the variables (eh) and (oh). However, there is some reason to think that this older contrast is giving way to an opposition which follows racial lines more closely, and in which Negro and Puerto Rican groups are opposed to the rest of the community. Associated with this differentiation is a very different type of linguistic index, which is worth considering briefly here.

There are certain marginal phonemic differences in the speech of New Yorkers which serve as near-absolute differentiators of racial groups. One is the presence or absence of a phonemic contrast of /i/ and /e/ before nasals. For the great majority of Negro speakers in the city, whether they come from three generations of New Yorkers or directly from the South, there is no contrast between *pin* and *pen, tin* and *ten, since* and *cents*. This phonemic feature is a regular characteristic of Southern English, and is common in Border States beyond the usual limits of southern linguistic features. However, there are no white speakers in our sample raised outside the South who show any tendency towards this phonemic merger. On the other hand, the merger has reached the stage of absolute regularity among younger Negro speakers. The few exceptions which do occur are always connected with some prominent circumstance in the life history of the individual that plainly accounts for the deviation. In two cases, the exceptions were Negro speakers who had grown up in Staten Island or in the Bronx without any Negro friends at all. In two other cases, the informant told of a

grade school teacher who had stubbornly drilled the entire class in this particular distinction.

A similar differentiation of Puerto Rican speakers can be found in the absence of the phonemic differentiation between "tin *can*" and "I *can*" as [kɛ:ən] and [kæn]. Those Puerto Rican speakers who have the most native New York City pronunciation will still fail to differentiate the auxiliary from the noun. Other New Yorkers do make this differentiation; in formal contexts a certain number have corrected their native [ɛ:ə] to [æ:] but the phonemic distinction between the auxiliary and the noun is never reversed, and eventually emerges in natural speech in all but a tiny minority of cases.

## CONCLUSION

There is an impressive regularity in the forces which are reflected in the various phonological correlates used here, forces which move the speech of large classes of people in such uniform directions and magnitudes. But it is the great utility of the correlates which should be stressed. The data which are illustrated here represent only the first step in establishing objective distribution of linguistic features and delineating class norms. This basis may then be utilized to measure the degree of oscillation for individuals and class groups, measures which in turn can be correlated with social mobility and social insecurity. Subjective reactions, both unconscious and deliberate, are a part of the overall structure of linguistic behavior which rests upon these objective indexes.The structure of New York City English is eventually to be seen as a many-dimensional complex, in which social and stylistic variation intersect with purely linguistic models of covariation.

With the firm empirical base provided by quantitative measures of linguistic performance, we are in a position to observe linguistic change as it is taking place, contrasting one generation, or even half-generation, with another. We can trace such changes along many dimensions of the linguistic structure of the speech community, and thus approach some of the most central problems of the mechanism of linguistic evolution.

## NOTES

[1] I am particularly indebted to Dr. Lloyd Ohlin of the New York School of Social Work, and Dr. Wyatt Jones, of Mobilization for Youth, for permission to use the 1961 survey as a base, and for their help and cooperation at many stages of this work.

[2] Stable arrays of social and stylistic variation can be derived from subgroups of the sample containing as few as 25 respondents, since between five and ten respondents seem to give a reproducible result for a given class group. However, the larger sample of 81 New York City respondents to be discussed here allows the investigation of superimposed patterns on the basic patterns (such as the crossover pattern discussed below), and of other variables such as racial and ethnic group membership, age level, and sex. On the whole, it may be noted that linguistic behavior seems to show much greater regularity, and require smaller samples, than many other types of social behavior.

[3] The original MFY index utilized the education of the breadwinner for the class status of the respondent; in the final analysis, both methods reached the same result.

[4] An index which combined two indicators—occupation and education—was useful in analyzing those linguistic variables which were apparently established at a relatively early period in the respondents' histories. Chapter VIII of the complete report (Labov 1964), is devoted to the analysis of the socio-economic index, and the examination of individual indicators.

[5] The primary focus of attention is the respondent's residence from the age of five to the age of 13. It is apparently in this pre-adolescent period that dialect characteristics are most firmly fixed, and the automatic, motor-controlled responses established.

[6] Immunity from conscious distortion is not required, but total suppression removes the variable from the range of measurable quantities. The use of *ain't*, for example, is suppressed so completely in most contextual styles that it is hardly useful for work of this sort. On the other hand, attempts to increase the amount of *r*-pronunciation have little effect upon the values of the indexes shown here.

[7] Syntactic and morphological indexes have considerable importance because of their prominence in social consciousness, but their low frequency and susceptibility to conscious suppression make them much less useful for quantitative work. Intonational cues are frequent and not easily altered in formal situations, but at present we lack the large body of theory and practice in codifying intonation which we have for segmental phones. Some of the statistical measures used in psycho-linguistic research, such as the type-token ratio, may be quite revealing as applied to this data, but the volume of calculations required makes them far less efficient for the analysis of linguistic behavior than the indexes presented here. It is doubtful that we can learn as much about social processes from the study of *ad hoc* statistical measures as we can from indexes which have social meaning in themselves.

[8] One group of words is excluded, and utilized for a separate index: those in which /r/ follows a stressed, midcentral vowel, as in *bird, work, shirt.* The rapid extinction of the traditional vowel /əy/ in these words has led to an early and relatively consistent use of /r/ in these words by most sections of the population.

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