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ABSTRACT
                In the past, social lectologists have not considered
their work as contrastive linguistics. One reason is that sociolects
of a language differ quantitatively; differences lie in the frequency
patterns with which certain forms occur in each lect. Contrastive
linguistics deals with standard or idealized languages, while
sociolects are often nonstandard or socially stigmatized. Contrastive
social lectology began in the 1960s to study vernacular Black English
to aid in teaching standard English to minorities. Quantitative
measurement of variable linguistic forms aids in examination of
speech differences as related to extralinguistic factors. It is
necessary to identify social and linguistic environments affecting
use of variants. This article charts the occurrence of several
variants by social class; analysis reveals the operation of rules
governing variable appearance. Optimal use of variables is controlled
by a hierarchy of constraints, but a correct theory as to how this
system works has not yet been formulated. This notion of structured
variability provides a model for variation in interlanguage
contrastive studies. In any contrastive study it is important to
examine the actual lects contacted rather than idealized norms, as
illustrated in a recent study of Puerto Rican English in East Harlem.
(CHK)

CONTRASTIVE LINGUISTICS AND SOCIAL LECTOLOGY

by

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CONTRASTIVE LINGUISTICS AND SOCIAL LECTOLOGY

In one form or another, lectologists have been comparing socially differentiated lects for some time. Traditional descriptions of social aspects of regional varieties have often included statements about how certain socially stigmatized items or rules corresponded to their socially prestigious counterparts. Although this sort of incidental comparison has traditionally been included in discussions of nonstandard varieties, few lectologists have considered themselves to be engaged in contrastive linguistic studies as such. There seem to be several reasons why such types of comparisons have not been considered under the rubric of contrastive linguistics.

For one, social differences between related varieties of one language have been viewed as relatively minor when compared with the range of differences to be found in different language systems. Whether intentional or not, contrastive linguistics has built its tradition around comparisons of different languages, not different varieties of the same language. Given the degree of differences typically involved in contrasting language systems, it is certainly understandable why studies might start at this point, but the reasonable expectation that intralanguage contrastive studies would follow was not realized in many cases.

The contrastive study of sociolects also involves a somewhat different set of problems related to the notion of discreteness in language comparisons. In looking at two different languages, one often finds instances where form $\underline{X}$ in L1 corresponds to form $\underline{Y}$ in L2. But studies of sociolects which were done during the 1960's, particularly those which followed the Labovian quantitative orientation, indicated that sociolects were often not differentiated by discrete sets of features alone, but also by variations in the frequency with which certain features or rules occurred. Studies traditionally built on a qualitative model were then confronted with instances where $\underline{X}$ and $\underline{Y}$ were to be found in both sociolects, but differed in the extent with which each occurred in a given lect. Studies by Labov (1966, 1968), Shuy, Wolfram, and Riley (1967), Ma and Herasimchuck (1968), Wolfram (1969, 1973), Fasold (1972), Legum, et al (1971), and Anshen (1969) all indicated the essential nature of quantitative differences as opposed to qualitative ones. The differences between Sociolect1 and Sociolect2 could not always be found in discrete sets of correspondences, but in the frequency patterns with which forms were found in each sociolect. The initial reaction to such quantitative dimensions is that contrastive linguistics is better exercised by looking at discretely differentiated languages rather than nondiscrete lectal differences, whether they be social, regional, agegraded, or ethnic.

Straightforward linguistic considerations, however, do not appear to be the only reason why sociolectal studies typically have not been considered as contrastive studies. Part of the reason seems to be related to socioeducational matters. In contrastive studies of different languages, the analysis have tended to concentrate on standardized norms, often more idealized than real, of two language systems as the basis for the systematic comparisions. In looking at different sociolects, one is often confronted with a situation where one lect is the normative socially prestigious variety and the other a socially stigmatized one. In this context, one is faced by the popular conception that nonstandard varities are simply unworthy approximations of standard varieties. While this has certainly not been the doctrinaire position of linguistics for some time now (cf. Hall, 1950), there is little doubt that linguists traditionally expended a great deal more energy investigating the nature of idealized standard varieties than they have their non-standard counterparts.[2]

The possible use of contrastive studies as a basis for pedogogy also seems to be an important factor in looking at the types of situations in which contrastive studies have been done. Levenston (1971) points out that there are four main claims for the value of contrastive studies to language teaching: (1) predicting errors, (2) selecting and preparing teaching materials, (3) understanding pupils'. language learning problems and (4) explaining types of errors. Given these potential uses, it is essential to note that the traditional view commonly held in educational circles was that nonstandard varieties were to be corrected on the spot by teachers concerned with the perpetuation of "proper" language. The popular view of nonstandard varieties as haphazard deviations then allowed for ad hoc methods of corrections. Contrastive studies were typically not considered to be necessary to such methods so that there was little call from educators for studies which might serve as a basis for systematic instruction in standard English. But even traditional grammar textbooks highlighting common "errors" still resorted to a quasicontrastive approach citing reference points of "common. errors" as they contrasted with the standard usage.

Contrastive Social Lectology in the 1960's

It was only during the last decade that more overtly systematic types of comparisons between sociolects began to appear to any extent. Quite clearly, this can be traced to the developments in the study of nonstandard dialects which took place in the United States during the 1960's and, in particular, the study of Vernacular Black English. There are several prominent reasons why this variety was the focus of attention in social lectology. The most prominent reason appears to be related to the concern for minority group education that took place during the past decade. Concerned over

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the educational failure of these groups, a number of educational programs funded by federal funds and private foundations set out to develop systematic programs for educating low-income minority group people. This education process, among other things, naturally included language, since it was observed that a fairly divergent non-standard variety was characteristically used by these groups. Some reasoned that language might, in fact, be a primary problem in the educational process. And if language was indeed such a problem, then it ought to be attacked more systematically. Linguistic description of differences between standard and nonstandard varieties was considered as a preliminary to the development of adequate educational programs in language. In this regard, it is important to note the precedent set by the publication of a small pamphlet by the Center for Applied Linguistics entitled <u>Nonstandard English and the Teaching of English</u> in 1964. The general approach taken by the authors in this booklet was that Vernacular Black English was sufficiently different from standard English to warrant materials which utilized foreign language teaching methods. This "quasiforeign" language situation, as Stewart classified it, justified a call for foreign language techniques. And it was at this point that the contrastive basis for developing quasiforeign language materials came to bear. In this article, several contrastive paradigms are given as they relate to problems of teaching standard English.

From this point, quasicontrastive studies of nonstandard and standard varieties have commonly been cited as the basis for developing materials in the teaching of standard English. One can note, for example, the following citation from Labov et al's monumental study of Vernacular Black English in New York.

> In general, the overall objective of this study is to portray the relations between a superordinate and a subordinate dialect of English . . . Attempts of teachers to deal with individual items of NNE [Nonstandard Negro English] have generally failed: we have every reason to believe that we are dealing with a system in equilibrium which cannot be easily changed by pressure on any one point. Knowledge of the system as a whole is required as a first step in any educational program. (1968:24)

Although most linguists have viewed this report in terms of its important theoretical and methodological insights for socio-linguistics, there is little doubt about the motives underlying the original research

A more specifically oriented contrastive type of description is found in Fasold and Wolfram's (1970) description of the features of Vernacular Black English in <u>Teaching Standard English in the Inner City</u>. The introduction states the purpose rather succinctly:

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Our purpose here is to present the information
currently available on the linguistic features
of Negro dialect in nontechnical language, but
in sufficient detail to be useful, if not for
teachers themselves, at least to those who would
like to write teaching materials but do not feel
secure in their knowledge of the features involved.
(1970:41)

A number of students of linguistics have found this summary of
features to be useful purely as a descriptive guide, but educators
have taken the same account as a starting point for various types
of materials development.

A final example which is more integratively related to pedagogy
is found in Bartley and Politzer's Practice-Centered Teacher Training:
Standard English for Speakers of Nonstandard Dialects (1972). As
opposed to the descriptive types of studies presented by Labov et al.
and Fasold and Wolfram, this presentation does not restrict itself to
one particular lect. As Bartley and Politzer put it:

. . . the purpose of this syllabus is not to
acquaint teachers with only one specific non-
standard dialect. Therefore, the description
of standard English rather than the coherent
presentation of any one specific nonstandard
was taken as the point of departure and as the
principle of organization. (1972:2)

When looked at in more detail, then, we find that we do have
in social lectology a number of contrastive-type descriptions.
And if we look at some of the pedogogical materials for teaching
standard English developed during the latter part of the 1960's,
we will find that a number of them have been based on the above
types of contrastive studies. Materials designed to teach
spoken standard English such as Feigenabum (1970), Cockrell and
Johnson (1967) and Robinett and Bell (1968) seem to be prime
examples of the use of such descriptive bases. In addition to
its application to matters of teaching standard English, these
contrastive bases have served as a basis for looking at the
teaching of reading to speakers of socially stigmatized varieties.
Looking at the contrastive data, however, different scholars
have come up with different conclusions. Stewart (1969) and
Baratz (1969) have concluded that there is sufficient difference
between some nonstandard varieties and standard English to
warrant readers written in the vernacular lect. Looking at the
same contrastive base, Shuy has concluded that points of contrast
between lects ought to be neutralized in the preparation of
materials, and Goodman (1969) has urged that extant materials
can be retained if lectological renderings are allowed (see
Wolfram 1971 for a summary of these positions). Cross-lectal

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interference in writing has lagged behind the published concern about speaking and reading standard English, but more recent studies have devoted some attention to contrastive lectology as a basis for predicting writing interference (Wolfram and Whiteman 1971, Crystal 1972). And preliminary materials for teaching standard English in writing are currently being prepared based on comparative data of different sociolects.

The Quantitative Dimension in Contrastive Social Lectology

In the previous section, we have mentioned that the theoretical contributions of social lectology have overshadowed its contrastive use in pedagogical application. This is due, in a large measure, to the quantitative dimension which was developed out of such studies. In this section, we shall look in more detail at the quantitative dimension which emanated from soicolectal studies in the United States. The discovery that various sociolects in the United States were sometimes differentiated by variations in the frequency with which certain features or rules occurred was un-doubtedly the most significant contribution of sociolinguistic studies in the last decade.

The Linguistic Variable

The study of linguistic variables rather than only categorical constants adds a new dimension to the examination of speech differences, namely, the quantitative measurement of variable speech forms. Earlier studies (Fischer 1958, Labov 1966, Wolfram 1969) indicated that as quantitative methods were utilized, correlations between linguistic and social patterns emerged. These treatments were largely done within the framework of what Labov called the linguistic variable. The linguistic variable, itself an abstrac-tion, is realized in actual speech behavior by variants; that is, individual items which are members of a class of variants con-stituting the variable. Labov noted:

> Whereas the linguistic variant is a particular item--
> a morph or a phone--the variant is a class of variants
> which are ordered along a continuous dimension
> and whose position is determined by an independent
> linguistic or extra linguistic variable. (1966[b]:15)

The formulation of the linguistic variable was established in sociolinguistic descriptions as the unit which serves as a basis for correlating linguistic variation with extra-linguistic factors. Variants or categories of variants are distinguished with reference to their potential correlation with social factors. For example, in Wolfram (1969), morpheme-medial and final θ variable is divided into four categories of variants as in Table I.

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Table 1. Classification of Variants of θ Variable

Category	Phonetic Realizations	Examples		
θ	[θ] [tθ]	[tʰuθ] [tʰutθ] 'tooth'		
		[nʌθɪŋ] 'nothing'		
f	[f]	[tʰuf] 'tooth'		
		[nəfɪn] 'nothing'		
t	[t] [ʔ] [t˺]	[nʌt] [nʌʔ] 'nothing'		
		[wɪtɪm] 'with'em'		
∅		[wɪmi] 'with me'		
		[nʌɪn] 'nothing'		

The particular value of a given linguistic variable is viewed
as a function of its correlation with extralinguistic variables
and independent linguistic variables. For example, in the study
referred to in Table 1, the value of each linguistic variable was
viewed as a function of its correlation with socioeconomic class,
racial isolation, age, sex, and contextual style.

The quantitative measurement of linguistic variables necessarily
involves counting variants. Although this may, at first glance,
appear to be a simple procedure, sometimes even the simplest type of
counting raises a number of subtle problems. In fact, Labov et al.
have gone so far as to note that "the final decision as to what to
count is actually the final solution to the problem at hand" (1968:14).
In the first place, it is necessary to delimit the number of variants
which can be identified reliably and to select relevant categories
of variants for tabulation. For example, in Table 1 it is noted that
[θ] and [tθ] are members of one category and [t˺] [ʔ] and [t] are
members of another category. In some cases, the classification of
variants is based on a decision as to which distinctions are socially
relevant for tabulation. Thus, we have decided that the distinctions
between [t˺] [ʔ] and [t] are not socially important in the delimit-
ation of the morpheme-medial and final th variable.

It is also important to identify the total population of utter-
ances in which an item may "potentially" vary. For example, in
Labov's (1969) discussion of copula absence, Labov notes that there
are certain types of syntactic constructions (e.g. "exposed" syn-
tactical positions") where copula contraction of the type He's ugly
or you're nice is not permissible in either standard or nonstandard
lects. Instead, a full form of the copula must be present (e.g.

I know he is). In other environments standard English may use the
contracted form of the copula and some nonstandard lects may
fluctuate between the contracted form and copula absence (e.g. He's
ugly~He ugly). To get an accurate account of variation, it is
necessary to separate these various types of environments, elimin-
ating those contexts where copula presence is categorical.

Further, it is necessary to identify relevant linguistic
environments (phonological, grammatical, and semantic) which may
affect the variation of items. In identifying and classifying
different types of environments affecting variation, it is also
necessary to exclude environments in which distinctions between
variants are neutralized for phonetic reasons. Thus, in the tab-
ulation of word-final consonant clusters it may be necessary to
exclude clusters which are immediately followed by a homorganic
stop (e.g. test day) from the tabulation since it is sometimes
impossible to determine whether the final consonant of the cluster
is present or absent. The importance of identifying relevant
linguistic environments for quantitative measurement cannot be
overestimated.

Once the process of quantifying is set forth, relative
frequencies of the variant categories are then calculated as they
correlate with various social classifications. Thus, in Table 2
we observe distribution of variants for the th variable in terms
of four social classes of the Black population as delimited in
Wolfram (1969:84).

Table 2. Frequencies of Variants for Morpheme-Medial and Final th
Variable of Detroit Blacks

	% θ	% f	% t	% ∅
Upper Middle	87.9	5.5	6.1	.6
Lower Middle	82.6	11.0	5.8	.6
Upper Working	40.8	37.9	19.5	1.8
Lower Working	28.7	44.7	20.0	6.6

In Table 2, we see that the relative frequency of the four
variant types correlates with social class in the Black community
in Detroit. The variant θ is used significantly more frequently
by the middle classes than the working class groups, who use the
other three variants more frequently than the middle classes. In
this way, we show that the th variable correlates to social class
in the Black community.

At this point, it is essential to note that the variants of a variable are determined primarily on the basis of sociological (or sociolinguistic, if you will) categorizations rather than linguistic ones. Thus, we differentiated four variants for the morpheme-medial and final th variable because we hypothesized that this categorization might reveal relevant contrasts for different social groups of speakers. With respect to the linguistic system, the variants of a linguistic variable might be part of one or more structural units. The variants, or even the subvariants of a variable may be derived from linguistic rules quite unrelated to each other. The question that this raises is what relevance does the linguistic variable have to the linguistic rules of a given language or lect? As originally formulated by Labov (1966a), the linguistic variable was a convenient fiction with heuristic value for the correlation of linguistic and sociological data. In later studies, however, it was maintained that there was a theoretical construct related to variability which was essential to a language grammar.

Variable Rules

Traditionally, language grammars did not concern themselves with the notion of variability other than the fact that some rules were posited as obligatory and others were optional. The fact that a particular optional rule might apply more frequently in one context (linguistic or social) was considered irrelevant in the formulation of rules for any given language or lect. If a grammarian observed that the degree of fluctuation varied in certain contexts more than others (and Labov (1971) has collected a number of examples to demonstrate that this type of observation was made), it was dismissed as incidental information. That is, it had no relation to actual rule formulation. Degree of optionality was simply not considered within the provenience of linguistic description of language competence. Detailed studies of variability, however, indicated that there was a systematic regularity to much of this variation. In part, this regularity could be attributed to extralinguistic factors such as class, style, age, sex, and so forth. But it was also demonstrated (particularly in Labov, et al. (1968) and Wolfram (1969)) that variability could be correlated with independent linguistic variables such as phonological or syntactical environment. The effect of linguistic constraints on variability was quite striking in its regularity. For example, take the case of word-final consonant clusters when the final member of the cluster is a stop and both members have the same voicing specification. In a number of varieties of English, the final stop member of the cluster can be deleted. According to the rule, desk may be pronounced as [dɛs] and hand [hæn]. This deletion rule may operate not only in monomorphemic clusters (i.e. clusters where both members are part of the same morpheme) but bimorphemic clusters as well (i.e. where members of the cluster are part of two different morphemes). This means that words such as messed or fanned may be pronounced as [mɛs]

and [f⊕n] respectively. But the extent of deletion is not equal
for the two types of items. For all groups for which this variable
has been studied, it is observed that deletion is more frequent in
monomorphemic clusters than in bimorphemic ones. In addition to
this constraint, it has also been noted that when the cluster is
followed by a word beginning with a consonant, it is more frequently
deleted than when it is followed by a vowel or pause. The relative
effect of these two environments can be seen in Table 3, taken from
data from Wolfram (1969) and arranged by Fasold (1970). The fre-
quencies are tabulated for four different social groups of Blacks in
Detroit. The single hatch (#) indicates an internal word boundary
and the double hatch (##) indicates an external word boundary.

Table 3. Frequencies of Simplified Consonant Clusters in the
Speech of Detroit Blacks, by Linguistic Environment

Social Classes

	Upper Middle	Lower Middle	Upper Working	Lower Working
C#___##(V)	.07	.13	.24	.34
C___##(V)	.28	.43	.65	.72
C#___##C	.49	.62	.73	.76
C___##C	.79	.87	.94	.97

In Table 3, it is readily noted that for all four social classes
of Blacks in Detroit, the same rank order pertains. That is, the
most frequent context for consonant cluster simplification is when
the cluster is followed by a consonant and part of a monomorphemic
cluster, the next most frequent when it is followed by a consonant
and part of a bimorphemic cluster, the next most frequent when it
is followed by a vowel (or pause) and part of a monomorphemic
cluster, and the least frequent when followed by a vowel and part
of a bimorphemic cluster. When we examine the two types of con-
straints we notice that they can be ordered according to the prin-
ciples of geometric ordering. Thus, we have the following array
for consonant cluster simplification:

```
                              Monomorphemic>
## +C _____
                            | Bimorphemic>
        |
        |                     Monomorphemic>
## -C _____
                            | Bimorphemic
```

Studies of variable linguistic behavior according to the various
constraints have indicated several important observations. First,
we note that this type of ordering is quite regular for various
social groups. For example, although the frequencies are different
from social group to social group in Table 3, we noted that the rank

order is quite parallel. Actual frequencies may differ but the order of constraints is quite constant. The type of constraints indicated above has been verified in a number of settings. For example, Labov et al. (1968), Wolfram (1969), Legum, et al. (1971), and Fasold (1972) all reveal that both the following environments and the presence or absence of a grammatical marker in the cluster are important constraints on optionality. Frequencies differ from study to study and in some cases, the ordering of constraints is quite regular.

The impressive regularity of these types of constraints on variability was responsible for Labov's original postulation that optional rules in grammars be modified in such a way as to allow for the specification of constraints on optionality. Thus, for example, an optional rule may include some kind of specification to indicate the regular and ordered effect of environment on variability. In Labov's original formulation, he used Greek prescripts to indicate this ordering.

$$X \rightarrow (Y) \; \langle \; Z \; \underline{\hspace{1cm}} \; B \sim W$$

In the above formulation, there are two constraints on the optionality of the rule which produces Y from X. The first constraint is a preceding Z and the second the following W. If Z is + the rule is favored and if it is -, it is inhibited. For W, an ~ indicates the absence of the feature favors the application of the rule and the presence inhibits it. According to the principle of geometric ordering, the following rank of constraints on optionality obtains:

$$+Z \; -W >$$
$$+Z \; +W >$$
$$-Z \; -W >$$
$$-Z \; +W$$

The actual frequency of rule application seems to be incidental only to the ordering, and is, in essence, a heuristic device for the establishment of the ordering. The frequency levels appear to be a part of performance, but the ordering of constraints a part of competence which needs to be accounted for in a descriptive grammar. Optional rules which incorporate these features have become known as <u>variable</u> rules. Whereas the <u>linguistic variable</u> we discussed earlier had no real linguistic significance in terms of the formal representation of a grammar, the variable rule is posited as a formal aspect of linguistic theory to be accounted for in language grammars.

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Variable Constraints and Linguistic Theory[4]

It is now important to consider how linguistic theory is to capture such facts about language variation. To develop a theory which accounts for a certain language phenomenon is to do much more than to state a given linguist's preferences. Linguistic theory, if studied seriously, has as its goal accounting for exactly the capabilities people have in using their language--no more and no less. Linguistic theory, then, can be viewed as a special kind of study in psychology. Taken seriously, every capability built into a linguistic theory constitutes a claim that the same capability is built into the language control parts of the human brain and speech mechanism. The theory should not include such aspects of language use that may be derivable from general probabilities on events in the world, or even those derivable from general (not language-specific) human capabilities. On the other hand, the theory should not fail to include capabilities which human beings actually have in their ability to control language. Ultimately, then, linguistic theory will only be shown correct or incorrect when much more is understood about the operation of human brain neurology. To the extent that there are neurological analogues for theoretical constructs, the linguistic constructs will be validated. In the meantime, we must rely on careful observation of language data analyzed with all the intelligence and scientific rigor that can be brought to bear.

In the area of optionality, it is important to decide just how much capability our theory is to claim for the human language user as far as influence on variability is concerned. We will discuss six degrees of control over variability, each making stronger claims for the human language user than the last and each stronger capability including the less strong ones. We shall attempt to determine which claim actually accounts for what speakers can be observed to do without making excessive claims for what they can do. The first claim, and the weakest, is that human beings are capable only of discriminating which rules are optional and which are obligatory. For example, a person who speaks English knows that a syllable-inital p must be pronounced with aspiration, but the aspiration is optional for final p. Proponents of this view, which has had a long history of linguistic theory and has not been challenged until very recently, would say that this is the full extent of the language user's capability. The influences on degree of optionality are either ignored or taken to be derived from general principles not language specific and therefore not to be included in linguistic theory. This is the traditional position in linguistics and the ⌐ ⌐ probably accepted by most linguists today.
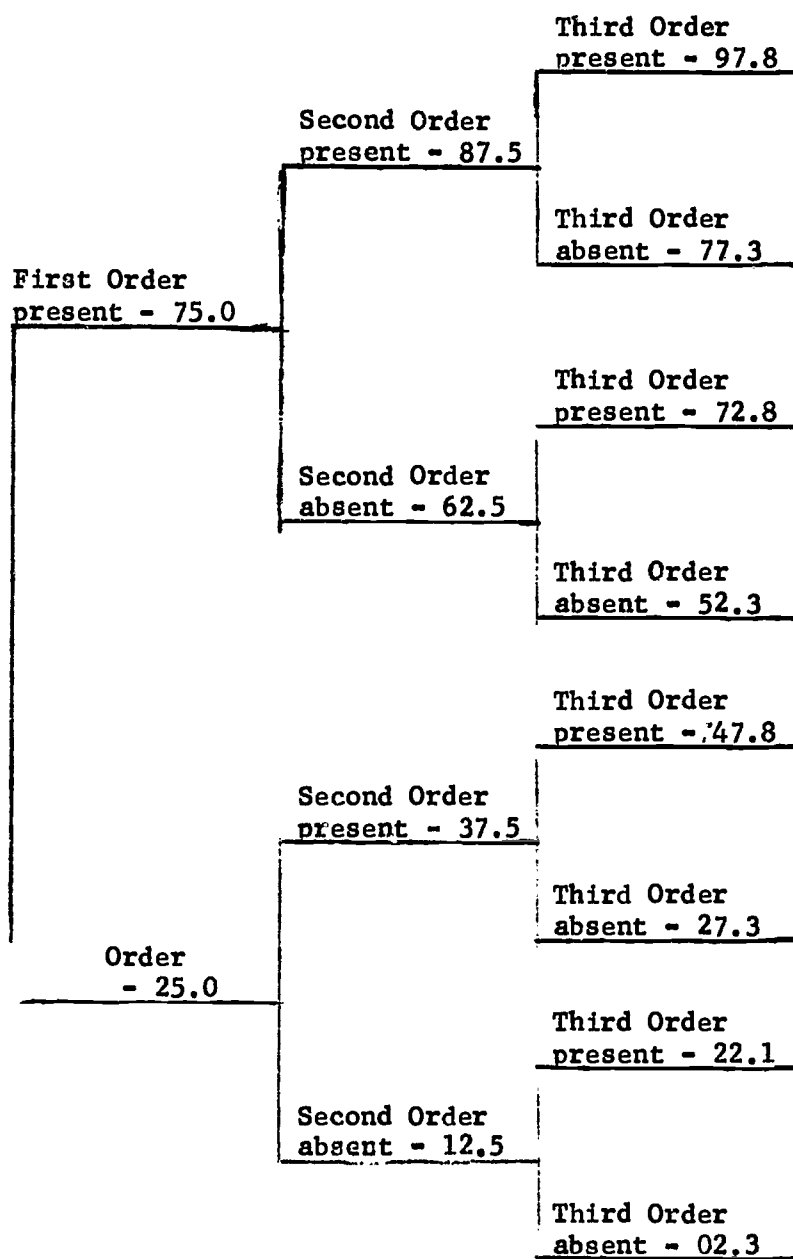
Another conceivable claim would be that a speaker knows which rules are optional and furthermore what the factors are which favor the operation of the rule. To go back to our example of the final stop deletion rule when another consonant precedes, this would mean that the theory would have to have the power to identify the final

stop deletion rule as a variable rule and also account for the
fact that its operation is favored if a nonvowel follows or if
the final stop is preceded by a sonorant. No claim would be
made for the relative strengths of the two influences, however.
This intermediate position, though a reasonable one, has never
to my knowledge actually been adopted by any linguist. Most
linguists willing to make a claim as strong as this one are
willing to go further.

The next stronger position--which actually _does_ have adherents--
is that the hierarchical order of constraints is known to the
language user in addition to the fact that some rules are variable
and which factors are the ones that favor operation of the rule.
If this claim is correct, language users have the capability,
derived from their ability to control language, of identifying a
following nonvowel as a stronger influence favoring final stop
deletion than a preceding sonorant. This position is the one
taken in Labov's 1969 article in _Language_ proposing the variable
rule as a theoretical construct, and by several scholars who have
followed him.

A further suggestion would be that the user of a language know
which features favor variability, the hierarchy of constraint
strength, and also _how much_ stronger a higher order constraint
is than a lower one. Given the hypothetical ordering in Table
4 it is possible to state that the first order constraint exceeds
the second order constraint in strength by a wider margin than the
second order constraint exceeds the third order one. In the case
in which the first order constraint is present and the second order
constraint is absent, the rule operates 62.5 percent of the time.
When the second order constraint is present but the first order
constraint is absent, the output is only 37.5 percent, a difference
of 25.0 percent in favor of the first order constraint. There are
two cases in which the second and third order constraints conflict.
In the once case, the presence of the second order constraint with-
out the third order constraint produces an output of 77.3 percent,
while the presence of the third order constraint in the absence of
the second order constraint results in a 72.8 percent output. In
the other case, the second order constraint exceeds the third order
constraint by 27.3 percent to 22.1 percent. In both cases, the
difference between the two is about 5 percent. Therefore, we can
say that the first order constraint exceeds the second order con-
straint by a margin which is five times greater than the margin
by which the second order constraint exceeds the third order con-
straint. It may be conceiveable that human users of language have
precisely this capability, but to state it formally in a rule is
extremely difficult. At this point no one has proposed that rules
be constructed to include relative margins of difference between
constraints.

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Table 4. Hypothetical Ordering of Three Constraints on a Variable
Rule

```
                                                                Third Order
                                                                present - 97.8
                                          Second Order
                                          present - 87.5
                                                                Third Order
                                                                absent - 77.3
          First Order
          present - 75.0
                                                                Third Order
                                                                present - 72.8
                                          Second Order
                                          absent - 62.5
                                                                Third Order
                                                                absent - 52.3


                                                                Third Order
                                                                present - 47.8
                                          Second Order
                                          present - 37.5
                                                                Third Order
                                                                absent - 27.3
          Order
          - 25.0
                                                                Third Order
                                                                present - 22.1
                                          Second Order
                                          absent - 12.5
                                                                Third Order
                                                                absent - 02.3
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A further claim would be that the language user comes to know probabilities which each of the constraints contributes to the frequency output of the rule by way of linguistic competence. Such a theory has been proposed by Henrietta Cedergren and David Sankoff (forthcoming) and developed by Gillian Sankoff (1972). The constraints on each rule are listed and a probability figure is associated with each constraint. It is clear that if such figures are known to the language user, he also knows the hier-archy (which can be derived simply by ranking the probabilities from highest to lowest). It is also true that the relative strength of each constraint can be derived by subtracting the probability of a' lower order constraint from the probability of a higher one. To illustrate how the system works, consider the formula for calculation of the probability of application of a variable rule. The formula, modified in noncrucial ways from the one in Cedergren and Sankoff (1972), is:

$$m = 1 - (1 - \text{1st order}) \times (1 - \text{2nd order}) \times ... \times (1 - \text{nth order})$$

This is to be interpreted as m (the probability of application) is equal to 1 minus the product of 1 minus the probability of the first order constraint times 1 minus the probability of the second order constraint and so on times 1 minus the probability of the nth order constraint. Each of the probabilities reflects the likelihood that the rule will apply. Subtracting each from 1 gives the probability that the rule won't apply contributed by each constraint. The product of these is the aggregate probability that the rule won't apply, given these constraints. Subtracting the figure from 1 gives the probability that the rule will apply. Assume a hypothetical rule with three constraints such that the probability contributed by the first order constraint is .89, by the second order constraint is .57, and by the third order con-straint, .16. Substituting in the formula, we get the probability of application in cases where all three constraints are present.

$$1 - (1 - .89) \times (1 - .57) \times (1 - .16)$$
$$=1 - (.11) \times (.43) \times (.84)$$
$$=1 - (.04)$$
$$= .96$$

That is, the probability is that the rule will apply in 96 out of every hundred cases in which all three constraints are present. It is to be emphasized that a figure such as .96 is a probability, not a fixed frequency of prediction. Observations of representative examples should result in observed frequencies clustering around 96 percent, not reaching exactly 96 percent in every observation.

Finally, it could be proposed that the theory must include all the factors which predict precisely the percentage frequency with which a rule will operate in every case. Associated with

each rule would be all the information necessary to determine for
a speaker the exact frequency of operation of that rule. No one
has actually proposed a theory with this capability, although
Labov (1969) has been widely misunderstood to have proposed just
this.

To recapitulate, we list the increasingly powerful theories
about control of variability:

Speaker capabilities	Proposed by
-Speaker can identify optional (variable) rules.	Traditional view
-Speaker can identify variable rules and which linguistic factors favor rule operation.	Cedergren and D. Sankoff (1972) (rule proper) (?)
-Speaker can identify variable rules, which linguistic factors favor rule operation and the hierarchical order in which they are ranked.	Labov, 1969
-Speaker can identify variable rules, which linguistic factors favor rule operation, the hierarchical order in which they are ranked and the extent to which higher order constraints are stronger than lower order ones.	No one, implied in Wolfram, 1973a
-Speaker can identify variable rules, which linguistic factors favor rule operation, the hierarchical order in which they are ranked, and that a probabilistic mechanism of competence generates these hierarchies.	Cedergren and D. Sankoff, 1972 (rule proper and "key")
-Speaker can identify variable rules, which linguistic factors favor rule operation, the hierarchical order in which they are ranked, the extent to which higher order constraints are stronger than lower order ones and not just the probability contributed by each, but an exact determination of the force of each in any given situation.	No one, common misunderstanding of Labov, 1969

For our purposes, it is assumed that the issue is not yet
settled but that the two weakest theories (optional rules and
variable rules with unhierarchized constraints) and the

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strongest (variable rules that purport to determine precise
frequencies of application) can be safely ruled out. The correct
theory will at least be capable of handling hierarchized con-
straints in general as proposed by Labov in 1969, and may be
powerful enough to predict the probabilities contributed by each
constraint. (This capability, as has been pointed out, presup-
poses the hierarchized constraint capability.) The theories
found plausible are bracketed in the above list.

Variable Analysis and Interlanguage Contrastive Studies

In the preceding sections, we have demonstrated how sociolectal
studies of varieties of the same language have demonstrated the
nature of structured variability and how this might be accounted
for in the formal representation of optionality in a grammar. On
one level, the type of variation observed in a unitary sociolect
may appear to be quite different from that existing between differ-
ent language systems. The notion of inherent variability as
opposed to code switching (which does, of course, exist as a set
of feature changes in response to some stylistic, situational,
interlocutor, topic or other functional shift) is a basic premise
of variable rules.[5] While there are obvious differences between
variability within a given lect and variation between two lan-
guage systems, there are, however, important similarities in the
nature of variation as it occurs in these diverse language sit-
uations.

To begin with, we must note that contrastive studies of
language systems often observe that the reflexes of two language
systems are   variable rather than invariant. For example,
it is often noted that the German reflex of English θ may
either be s or t. Different reflexes are not only associated
with different speakers, but may occur variably in the speech
of the same speaker. Statements like the following are commonly
found in contrastive studies:

> Since in Navajo this sound [i.e. /b/] never occurs
> at the end of a syllable, they often substitute /ʔ/
> (a glottal stop) for final /p/ or /b/ or reduce all
> final stops to the Navajo /d/. (Saville and Troike,
> 1971;41)

> /θ, d/ do not occur in Thai, and Thai speakers
> substitute /th/ or /t/ or /d/ or /s/; one of 1th/t,
> s/ for /θ/, and /d/ for /d/ in initial position.
> In final position, since Thai speakers fail to
> contrast voiceless and voiced anyway, the four
> substitutes are used interchangeably. (Kruatrachue,
> 1960;97-98)

In some cases, it is further noted that one particular reflex is considerably more prominent in one environment as opposed to another even though both may occur in this environment. The type of observation offered by Nemser with reference to Hungarian reflexes for English /d/ and /θ/ is characteristic of a more detailed account of reflex variability.

> No identification for g/θ/or /d/ is invariant: in final post-vocalic position H/f/ is preferred to /s/ or /t/ as the /θ/ reflex, but occurrences of the other reflexes are certainly not so rare as to be classified as erratic. Even in the case of the productive reflexes, where the dominance of the apical stops is very pronounced, instances of the occurrence of one of the sibilants are not infrequent. (1971;134)

In many cases, observations such as Nemser's are simply given to demonstrate the invariance of the reflexes. Thus, the above case is cited in order to illustrate that:

> . . . there seems to be little reason to believe that t.ie relationships established by bilingual speakers between the units of the two systems are of such regularity as to make their description in a set of formulas feasible. (Nemser, 1971:134)

Although the language situation involving interference is obviously different from the situation we described earlier in our discussion of variation within a given sociolect, there appears to be a quite similar pattern of structured variability. That is, the fluctuation cannot be predicted categorically, but there is a patterned relationship in which certain variants are clearly favored over other variants depending on the context. And although there may be important nonlinguistic variables that influence relationships of more and less (e.g. stage of second language acquisition), there also is evidence for the existence of independent linguistic constraints on variability (e.g. environment). Thus, for example, Nemser (1971:135) points out that the same informant preferred one variant in final position but another in initial position even though both were found in initial and final position. It appears that formulaic representation of this structured variability can be indicated in terms of hierarchized relationships of more or less just as we have written formal variable rules which can account for the structured variability of terms which are "inherently variable". Although the view of how such rules might fit into the grammar of a bilingual speaker may differ depending on how one views the nature of bilingual systems, it is quite apparent that this structured variation can and ought to be represented in an adequate representation of optionality.

Up to this point, we have been considering the nature of structured variation in language interference without any reference to the dimension of time. That is, we have taken a _static_ viewpoint. But there is also an essential aspect of structured variation which can apparently be tied in without understanding of language change over time, the _dynamic_ viewpoint. The structured variability of "interference" that we may observe at a given point in time seems to be a reflection of a dynamic process in which one moves, at least ideally, from the categorical use of one item to the categorical use of another one through a series of variable stages. If we adopt a model of language change which includes variability in an integral way (Bailey 1973), we may hypothesize that there are several different stages through which a change will go. The beginning point is the categorical usage of an "interference" variant and the end point is the categorical adoption of the corresponding variant of the second language. In between these two points there is variability in the use of the variants. The variable stages, we may hypothesize, will show some of the same types of environmental constraints (since many of them appear to be universal in their types of effects) that we isolated in looking at variation within a prescribed sociolect.

The first stage, as we mentioned above, may be the categorical occurrence of the interference variant. For example, if we are describing the German /s/ reflex for English /θ/, we may find that the s is found for English θ categorically at this stage.

In the next stage, we may have categorical interference in some environments but variable behavior in others. For example, the s interference variant for standard English θ may be variable (e.g. sree 'three') with θ in word-initial position but s categorically in word-final position.[6]

In the next stage, we have variability in a number (if not all) environments. If we follow the reasoning of Bailey (1973), we may expect that higher frequencies will occur in those environments where variability first occurred. Thus, if s and θ fluctuate in both word-initial and final position, we may expect that θ will be more frequent in word-initial than in word-final position, since variation first took place in word-initial position.

Following a stage of "maximum variability", some environments will categorically adopt the new variant while other environments will continue to indicate variability. Again, those environments where variability was first initiated will lead the way and become the first to categorically adopt the new variant. In our example, we would expect this to be θ in word-initial position. Finally, there is categorical adoption of the new variant in all environments as the process of acquisition is completed. Before the

process is completed, we may expect occasional lapses. If our hypothesis of how the change takes place is correct, we would expect these lapses to be environmentally restricted. This is, in fact, what we observed when we looked at the behavior of s and θ in Spanish interference of the children of Spanish immigrants (Wolfram 1973:75-77). It was only in word-final position that we observed this sort of restricted interference. It was this observation, if fact, which led us to reconstruct the various stages of θ acquisition the way we did in the preceding discussion.

As set forth in the preceding paragraphs, the notion of structured variability developed from studies in social lectology seems to provide an essential model for looking at variation in contrastive studies. Although there is no particular reason why this paradigm could have been developed only with reference to 'tudies in social lectology, the reason that it developed here rather than some other aspect of linguistic investigation seems to be related to the type of methodological procedures which developed in studies of this type (cf. Labov 1971). Only a methodological base dependent upon the detailed investigation of actual conversation can provide for insight into structured variability. Data on structured variability do not typically emerge when elicitation is limited to the elicitation of single response items in a tightly structured response format. Studies of sociolects in the 1960's clearly broke with the more tradi-tional questionnaire found in the study of regional lects. With-out a change toward extended conversations as the basis of inves-tigation, it does not appear that notions of structured variabil-ity developed during this period could ever have taken place. There is an obvious implication here for the study of inter-language relations. Only in looking at extended uses of a particular form can we discover the relations which cover certain types of systematic fluctuation. And if such application is to be applied to contrastive studies of one type or the other, then certain traditional approaches to contrastive studies must be revised.

Part of the traditional approach to contrastive studies was the predictive base. That is, it was often assumed that results of a particular case of language contact could be predicted on the basis of a comparison of current structural descriptions of the languages in question. But studies of actual interference vis-a-vis predicted interference indicate that this base must be qualified. As Nemser concluded in this comparative study of English and Hungarian phonology:

> . . . The results suggest a drastic qualification
> of the current belief, often stated and in other
> cases implied, that within narrow limits the type
> and magnitude of interference phenomena in a given

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> contact situation is predictable on the basis of
> phonetic structure . . . The results of this
> study, like those of most of the earlier experi-
> mental studies when candidly viewed, clearly
> reveal the untenability of this view (Nemser 1971;131)

Inherent in Nemser's challenge of the traditional con-
trastive reliance on prediction is the notion that reflexes be
based on the observation of real speech. In this regard, the
social lectologist fully concurs with a position that looks at
actual speech data as the basis for comparison. For one reason
or another, predicted reflexes may not occur. In addition to
instances where the predicted interference reflexes do not occur
for one reason or another, there are instances where emerging
interference cannot be related to a simple investigation of either
the source or target language. Traditional views do not allow for
the operation of rules which might not be related isomorphically
to one of the source languages or lects, yet in our study of
Puerto Rican English in East Harlem (Wolfram 1973), we found
cases of rules which did not directly correspond to any of the
potential sources.

For example, if we look at certain types of "double tense
marking" such as <u>1 didn't did it</u> or <u>I didn't meant to say it
that way</u>, we do not find any direct correspondence in Puerto
Rican Spanish, Black English, standard English, or any other
potential source language available to the speakers. Yet this
type of marking seems to have become stabilized in the speech
of some speakers. Apparently, we have the emergence of a new
type of rule. This construction appears to result from a type
of hyper-correction that takes place in the acquisition of
English. We hypothesize that a Spanish speaker goes through
several stages of interference which eventually result in the
production of this form. In the first stage, the pidgin stage,
a Spanish speaker attempting to learn English might simply
substitute the Spanish negative for the negativized auxiliary
in English, producing constructions like <u>He no eat the food</u> and
<u>He no like it</u>. In the second stage the tense marking is placed
on the verb, giving us <u>He no ate the food</u> and <u>He no liked it</u>.
In the next stage, the English rule for placing the tense in the
auxiliary is learned, but the tense is also redundantly retained
on the verb. This produces sentences like <u>He didn't ate the food</u>
and <u>I didn't meant to say it that way</u>. The end result is a form
stemming from a rule generalization which does not directly
parallel any source variety of English which could possibly act
as a model of acquisition. Since traditional views of biling-
ualism cannot account for such occurrances, it seems that we need
to revise our viewpoint on language contact to allow for such
innovations. But revisions can only be based on the observation
of actual rather than predicted interference.

The commitment to observing actual language usage also implies that actual lects of a language serve as the basis for comparison rather than idealized norms. Unfortunatley, many contrastive studies rely on idealized norms as the basis of comparison. Contrastive studies often try to assume a relatively normative base, in some cases approaching a variety which no one in fact may actually use. Yet, it seems apparent that the starting base must be the actual contact lects rather than the idealized norms. Only in looking at these varieties can the type of linguistic assimilation and interference be fully understood. And in looking at certain types of contact situations, it becomes crucial to include aspects of the sociology of language which account for certain types of linguistic phenomena that occur. This has been amply illustrated by our recent study of Puerto Rican English in New York City (Wolfram 1973).

Puerto Rican English in East Harlem: An Illustrative Case

The study of English among this particular population presents us with an ideal case study of the dynamics of language influence on the children of immigrants. The second generation Puerto Rican in East Harlem is subjected to several different pressures in terms of language usage. In the home, and until he is of school age, Puerto Rican Spanish is frequently the only langauge used. As the child enters school and some of his contacts are expanded outside the immediate family and neighborhood, English becomes an alternate language. By the time he is a teenager, English and Spanish generally fill specialized roles of communication, depending on a number of different variables such as participant, topic, location, etc.

To look at the question, "What is the English of these second generation Puerto Ricans like?", we had to examine the different authentic models of English to which these teenagers were exposed. In school and through the mass media, they are of course exposed to a standard variety of English. In the home, they are often exposed to a Spanish-influenced variety of English when their parents use English. However, previous studies indicate that probably neither of these sources are as important as the English used by their peers. In many cases, peers are predominatly restricted to other second generation Puerto Ricans. But the residential distribution and social contacts that exist in Harlem also bring many of these youngsters in contact with the surrounding black community. This social interaction therefore brings them in contact with Black English, spoken among lower socioeconomic class adolescents in Harlem. We found that aspects of our study of these second generation Puerto Ricans could be understood only from our knowledge of standard English, others from our knowledge of Black English and still others from our knowledge of Puerto Rican Spanish. Attempting to separate the

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sources which account for the varieties of English used by
second generation Puerto Ricans required us to look closely
at the dynamics of language influence.

Although in most cases the first language of these adolescents
is Puerto Rican Spanish, the actual incidence of straightforward
interference is quite minimal. In fact, these types of direct
interference are so rare that we have labeled the few occurrences
of interference we do observe as vestigial interference. The
concept of vestigial interference allows us to account, in a
reasonable way, for some occasional variants found among our
Puerto Rican informants while minimizing the integration of
these realizations in the variety of English they speak. Al-
though our definition of vestigial interference is quantitatively
defined in terms of an arbitrary cut-off point (in our case, less
than 5% of all potential cases in which the interference variant
might occur) it does have important implications for how we
represent the phonological and grammatical components of this
variety of English. Straightforward interference has not
typically become habitualized in the speech of second generation
teenagers. Although we may speculate about the importance of
Spanish influence at earlier stages of bilingualism, we must
conclude that by the time they are teenagers, direct interfer-
ence is of little structural significance.

While direct Spanish influence is minimal, it is quite
clear that for many Puerto Rican teenagers, the influence of
Black English from the surrounding community has had considerable
effect. For example, our analysis of morpheme-final /θ/ in-
dicates that a quite common realization is [f]. Words such as
bathroom, tooth, and mouth are pronounced as bafroom, toof, and
mouf respectively. This pronunciation cannot be attributed to
either standard English or Puerto Rican Spanish influence;
instead, we find its source in the common phonological pattern
described for the surrounding Black English-speaking community.

The quantitative distribution of the f variant is illustra-
ted in Table 5, where we have divided the informants into
three groups, the Black group of informants serving as a control
group, Puerto Ricans with extensive Black contacts, and Puerto
Ricans with restricted Black contacts.

Table 5. Comparison of f Realization in Morphene Final position
for Blacks, Puerto Ricans with Extensive Black Con-
tacts, and Puerto Ricans with Restricted Black Contacts

No. Inf.	Occ. f	Occ. θ	%f
Black (10)	36	8	81.8
PR with Extensive Black Contacts (6)	20	3	87.0
PR with Limited Black Contacts (23)	53	44	54.6

As we might suspect, the more intimate one's contacts with blacks, the more influence black speech will have on the variety of English acquired. We find what we would predict: the more extensive a Puerto Rican's black contacts are, the greater possibility for Black English influence on his speech. It is important to note, however, that the difference between the two groups of Puerto Ricans is quantitative rather than qualitative. Black English influence can be found in both groups, but it is more frequent in the group with extended Black contacts. This observation implies that the assimilation process is not all direct. That is, a Puerto Rican must not necessarily be dependent on direct peer contact with blacks in order for assimilation to take place. He may be assimilating it from other Puerto Ricans who picked it up through direct contact.

In addition to obvious Spanish-influenced English and straight-forward Black English assimilation, there are instances where rules from these two sources converge, i.e. the output from Puerto Rican Spanish and Black English rules may yield identical forms. For example, descriptions of syllable-final /d/ in Black English and Puerto Rican Spanish correspond in that both of these systems can delete /d/ in ways not permissible in standard English. We may get items like stupi', hoo' for standard English stupid, hood either because of influence from Puerto Rican Spanish or Black English. Similarly, Spanish-influenced English may allow for the reduction of certain word-final consonant clusters (e.g. west and build may be pronounced as wes' and buil' respectively) while Black English has a rule which results in the same output. When this takes place, we have what may be called convergent processes. Where convergent processes are operative, we find different distributions of features than we have for direct interference variants or nonparalleled assimilation variants. In these cases, we have the local nonstandard dialect reinforcing an output from a Spanish-influenced dialect. The resultant situation makes the incidence of certain features such as syllable-final /d/ deletion and word-final consonant cluster reduction quite stable and frequent in the speech of many Puerto Rican teenagers. In a situation of this type, we find that both groups of Puerto Rican speakers reveal a higher incidence of final /d/ deletion than the Black English speakers. This is illustrated by Table 6. This Table is broken down on the basis of the following environment (vocalic/nonvocalic) and stress of the preceding vowel (stressed/unstressed) since these are important constraints on variability. These figures in Table 6 indicate that, with one exception (a category with the smallest numbersof examples) the incidence of /d/ deletion is the greatest for the Puerto Ricans with restricted black contacts, next greatest for the Puerto Ricans with restricted black contacts, and least frequent for the Black English speakers. We may hypothesize that the higher figures for the Puerto Ricans with extensive black contacts are

Table 6. <u>Comparison of Blacks, Puerto Ricans with Extensive Black Contacts, and Puerto R</u>
<u>with Restricted Black Contacts for /d/ Deletion</u>

	Blacks		Puerto Ricans with Extensive Black Contacts		Puerto Ricans w stricted Black C	
	No. Del/Tot	% Del.	No. Del./Tot	% Del.	No. Del./Tot	%
Stressed __##V	11/107	10.3	17/64	26.6	37/229	1
Unstressed	5/24	20.8	3/14	21.4	13/33	3
Stressed __##NONV	76/216	35.2	54/95	56.8	191/386	4
Unstressed	38/79	48.1	59/75	78.7	123/181	6

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ison of Blacks, Puerto Ricans with Extensive Black Contacts, and Puerto Ricans
Restricted Black Contacts for /d/ Deletion

Blacks		Puerto Ricans with Extensive Black Contacts		Puerto Ricans with Restricted Black Contacts	
No. Del/Tot	% Del.	No. Del./Tot	% Del.	No. Del./Tot	% Del.
11/107	10.3	17/64	26.6	37/229	16.2
5/24	20.8	3/14	21.4	13/33	39.4
76/216	35.2	54/95	56.8	191/386	49.5
38/79	48.1	59/75	78.7	123/181	68.0

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due to the fact that these speakers reinforce the process of /d/ deletion which they may assimilate on the basis of their close black contacts with the process that might be attributable to Puerto Rican Spanish influence.

Although a descriptive study of the English of second generation Puerto Ricans may be of sufficient linguistic value in itself, findings from studies of this type demonstrate several matters essential to understanding types of language relations. First of all, they demonstrate that only an appeal to certain types of patterned quantitative dimensions can allow for particular types of insights about languages in contact. Thus, the classification of /d/ deletion as a convergent rather than a straightforward assimilation process was detected only because of the peculiarities of its quantitative dimensions. Secondly, it demonstrates the importance of looking at the actual linguistic models of the source languages rather than unreal idealized norms. Part of this understanding can only come from looking at certain social aspects of contact situations. Certain phenomena occurring in Puerto Rican English are only understandable based on our sociological knowledge of the extent of black contacts with Puerto Ricans.

No doubt, some of the principles I have suggested here and elsewhere with reference to structured variability will have to be revised or discarded in the light of further empirical studies. But I am convinced that many of the questions about linguistics in general and contrastive linguistics in particular will not be answered until we look at language in terms of its actual usage rather than some idealized construct of how we expect it to work prima facie.

Footnotes

1. Throughout this paper, I shall be using the term _lect_, and its associated designations following the changes in terminology proposed by Bailey (1973). Lect is considered to be the neutral term whereas _sociolect_ is used in a way similar to the more traditional term _social dialect_.

2. It appears that in some cases, the position of linguistic relativity among linguists has been more philosophical than real. The linguistic profession has been quick to strike out against educators who denegrate the systematicity of nonstandard varieties while presuming the good intentions of our colleagues who have made statements like the following:

> On various occasions, America's most experienced
> dialect geographer, Raven I. McDavid, Jr., has
> termed such persons as the Chicago Negro the
> "linguistically crippled". Their handicap is a
> lack of knowledge of the all important standard
> speech. (Pederson 1964:17)

3. This use of Greek prescripts is not to be confused with the use of matching Greek prescripts for paired feature specifications in generative phonology.

4. This section is adopted from Wolfram and Fasold (1974).

4a. This formula pertains to the "non-application" model in Cedergren and Sankoff's description. Reference to the input probability is omitted.

5. The distinction between "inherent variability" and "dialect mixture" seems difficult to justify on a purely formal basis (see Wolfram 1973a:3). From an historical perspective, it appears that most of the items currently classified as inherently variable resulted from dialect mixture of one type or another.

6. Since we are dealing here with a limited example, we shall eliminate the _t_ variant in our discussion of interference despite the fact that it is a quite legitimate interference variant (e.g. _tree_). But ultimately, this variant and its fluctuation with _s_ would, of course, be considered in the overall description of structured variability.

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