The Tensing and Raising of "Short a" in the Metropolitan Area of New York City

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I. Introduction

1.1. General Description of the Paper

This paper deals with the pronunciation of what we shall call "short a" in the New York City metropolitan area; in particular it discusses those pronunciations which depart significantly from something approximating the cardinal vowel \( [\text{æ}] \), the environments in which these pronunciations occur, and the implications for theoretical linguistics which have manifested themselves in the gathering of data and in the derivation of rules describing those data.

The paper is divided into five major sections: Sections I and II outline in broad terms the facts to be dealt with and some particular areas of linguistic inquiry to which they appear to be quite relevant; Section III describes the methodology of data-collection which has been used, along with restrictions in the sample; Section IV, by far the longest, describes in detail the pronunciation of the speakers in the preliminary and primary studies and produces the rules for the description; and Section V summarizes the answers to questions raised in Section II and also in the description in Section IV. In addition, there are three appendixes: the first gives a summary of the data gathered in Brentwood, Long Island, for comparison with New York City and nearby New Jersey (the areas specifically described in Section IV); the second is essentially a synopsis and review of Charles Ferguson's as yet unpublished paper on short a in
Philadelphia; and the third gives demographic data on the
speakers in the primary sample.

1.2. The Work of Earlier Investigators

The first mention in the literature of linguistics of a
phonetic shift in the pronunciation of what is today in New
York City short a occurs in the 1890's in the work of E. H.
Babbitt. He says, on p. 461:

_\_ is very high, pretty close to e of the normal
scale, and never mixed, [central or centralized] --
being thereby clearly distinguished from the New
York City e (> ə). Among the older New Yorkers this
very high vowel is used in all the set of words pro-
nounced in New England with the broad vowel (ask,
half, pass, etc.), and is really higher in these
words than in man, cab, etc. But this distinction
is now lost and the general vowel has quite over-
taken the special one (hend hand, këb cab, dens
dance, hef past half past). In can, the weak form
is kin, which is often kept even under accent.

It might be expected that a large body of literature
would have accumulated on short a in the New York City area
in this century. However, since Babbitt wrote, only three
authors have treated the topic to any degree of depth. ²

¹ "The English of the Lower Classes in New York City,"

² W. Labov, The Social Stratification of English in New
York City, (Washington, D. C.: Center for Applied Linguistics,
1966). (Hereinafter referred to as Social Stratification.)

G. L. Trager, "The Pronunciation of 'Short a' in
American Standard English," American Speech V (1930)
pp. 396-400; "What Conditions Limit Variants of a Phoneme?,"
American Speech IX (1934) pp. 313-315; "One Phonemic Entity
Becomes Two: The Case of 'Short a'," American Speech XV
(1940), pp. 255-258. (Hereinafter referred to as "One
Phonemic Entity.")

City, (New York: King's Crown Press, Columbia University,
1950).
Labov discusses short a largely with reference to its being a sociolinguistic indicator and in terms of its position in the system of long ingliding vowels of New York City English. Hubbell discusses its membership in the phonemic system and the apparent necessity of having three phonemes and phonemic sequences in order to represent it adequately (/æ/, /æh/, and /eh/). Trager focuses his attention on the particular environments and word classes which are relevant to the distribution of the phones in his own (and, in passing, his wife's) dialect -- apparently that of Newark, New Jersey.

1.3. The Basic Phonetics of the Situation

The broad data about the pronunciation and distribution of phones representing short a that can be gleaned from the literature (and there is almost complete agreement on the facts) may be summarized as follows:

a. before voiceless stops, [l], and [r], short a is realized as [æ];

b. elsewhere in monosyllables it is realized as a phone that is higher, longer, tenser, and sometimes nasalized, and is often an ingliding diphthong. The phone heard ranges in height from the level of [æ̆] all the way up to that of

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3 Social Stratification. Cf., especially, pp. 98ff.

[i], but it is always distinct from the vowel of bed, bid, bayed, and bead, though not necessarily from that of the final diphthong of idea. Variants frequently heard include [æ- :], [ɛ· ɔ], [ɛ:], and [ɛ· ɔ]. (For the sake of simplicity of reference, we will herein represent the phone mentioned in (a) as [æ] and the class of phones mentioned in (b) as [ɛ:].)

c. before a single consonant followed immediately by a vowel, [æ] is usually heard;

d. before a consonant cluster, [ɛ:] is usually heard;

e. in at least some auxiliaries, [æ] is heard regardless of phonetic environment;

f. a consonant appearing before a morpheme boundary is treated as if it were final. Thus, for example, adder 'snake' has [æ]; but adder 'one who or that which adds' has [ɛ:], since it is formed from add and -er.

5 An incident was related to the author by a friend, who, while on a visit to relatives in Brooklyn, took her 18-month-old son outside to play. A couple of girls, about ten years of age, asked whether they might play with the baby. Assured that they might, they asked his name. "Ian," was the reply. They seemed puzzled but began playing with him. In a few minutes they were apparently overcome by their curiosity, however, and asked why he had a girl's name. It took my friend some time to realize that they thought her son's name was "Ann," homonymous for them with "Ian," both being normally pronounced [i(j)ə n].

6 It should be made clear that tenseness is the main consideration here. Though raising is the normal concomitant, it is probable that tensing of short a is the prior phenomenon, in both the synchronic and diachronic aspects.
The data, in tabular form, are as follows:

**TABLE 1**

**DISTRIBUTION OF PHONES FOR SHORT a, AS DESCRIBED BY PREVIOUS INVESTIGATORS**

<table>
<thead>
<tr>
<th>Environment</th>
<th>Examples</th>
<th>Phone Occurring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before voiceless stops</td>
<td>tap, fat, match, lack, apple, satin, hatchet, tackle</td>
<td>[æ]</td>
</tr>
<tr>
<td>Before [l]</td>
<td>pal, salad</td>
<td>[æ]</td>
</tr>
<tr>
<td>Before [ŋ]</td>
<td>slang, anger, plank, anchor</td>
<td>[æ]</td>
</tr>
<tr>
<td>In other monosyllables</td>
<td>grab, mad, badge, drag, laugh, raft, path, pass, task, rash, salve, jazz, dam, damp, man, sand</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>Before a single consonant followed by a vowel</td>
<td>rabbit, adder 'snake', majesty, agate, daffodil, catheter, asinine, rational, gravel, lather, azimuth, azure, camel, planet</td>
<td>[æ]</td>
</tr>
<tr>
<td>Before a consonant cluster (not begun by a voiceless stop, [l], or [ŋ])</td>
<td>raft, after, task, pasture, damp, amber, sand, sandals</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>Some auxiliaries</td>
<td>can, have, had</td>
<td>[æ]</td>
</tr>
<tr>
<td>Before consonant (other than voiceless stop, [l], or [ŋ]) followed by morpheme boundary</td>
<td>adder 'one who or that which adds', mannish, laughing, maddest</td>
<td>[ɛ:]</td>
</tr>
</tbody>
</table>
1.4. Social Correction

Complicating the situation further, chiefly with respect to data-collection is the fact that the higher phones (especially those above [ɛ] in height) are socially stigmatized. There is, therefore, a strong tendency in formal styles, especially among members of the higher socioeconomic classes, for speakers to substitute [æ] where [ɛ:] is to be expected.\(^7\) A discussion of methods which have been used in order to minimize this social correction appears in Sections 3.1 and 3.2.

1.5. "Broad a" words

It has been noted that in the New York City area the incidence of broad a (i.e., a low back or low central vowel in a lexically-defined class of words in the environment before [ʃ], [θ], [s] preceding a consonant or boundary, and before [m], [n] preceding a consonant -- for example, laugh, command, pass) is limited to speakers from the highest socioeconomic classes and, even there, only in formal speech and predominately by older persons.\(^8\) In our data, broad a is virtually nonexistent, and New Yorkers generally cannot specify which words are members of the broad-a class. Thus, as Babbitt noted, "...this distinction is now lost."\(^9\)

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\(^7\)Labov, Social Stratification, Chap. 7 passim, particularly p. 242 and p. 258.


\(^9\)Loc. cit.
1.6. [ɛ:] and [æ] before Liquids

It has been noted in Section 1.2 that for New Yorkers short a before [l] is realized as [æ]; it is nevertheless true that [ɛ:] is heard before tautosyllabic liquids in many words (e.g., stare, area, pale, alien).\textsuperscript{10} A moment's consideration, however, should be sufficient to indicate that we are here dealing with underlying "long a" (as in bake, rabies, etc.); in traditional terms, we have a case of phonemic overlapping.\textsuperscript{11} For one thing, we find in several other dialects, notably in the Southern U. S., parallel forms with [ɛ],[ɛI], or [ɛT] rather than [ɛ:]. In addition, there are several pairs of words exhibiting a phonetic alternation of [ɛT] with [ɛ:] including day : daily; pray : prayer. Finally, although expected [ɛ:] from short a may be realized in formal speech as [æ] the vowel of stare etc., can never be [æ]; pale and pal are never homonymous, nor are Mary ([mAɹIi]) and marry ([mAɹIi]). Henceforth in this paper, we shall exclude forms coming from underlying long a and restrict ourselves to what is traditionally morphophonemic æ (including the broad-a class).

\textsuperscript{10}This is the case even for r-less speech. The facts are quite noticeable and are discussed in A. J. Bronstein, "Let's Take Another Look at New York City Speech," American Speech XXXVII (1962), pp. 13-26.

II. Why This Topic?

2.1. Overview

In addition to the obvious fact that we are confronted with a complex alternation involving phonological and morphological conditioning, and one which has never been adequately described, preliminary investigations led to the conclusion that intensive study of a large quantity of data might cast a great deal of light on some general linguistic problems. Comparisons of the speech of the author -- a lifelong resident of New York City -- with data given by Labov and Trager showed that quite a bit of individual variation was observable in particular lexical items and classes, and that some geographical differences obtained. These and other considerations engendered a belief that the following areas of inquiry might be at least partially illuminated and that other interesting phenomena might well emerge.

2.2. Effects of Social Correction

Since many speakers in New York City exhibit highly different phonological systems in informal as against formal styles, with continual shifting between styles, it seems possible that changes in the underlying systems of both styles might occur, or that at least single items might acquire altered lexical representations. We might find the latter situation, for example, if a particular lexical item learned relatively late in life under formal circumstances

\[12\] Labov, Social Stratification, Chap. 7 passim, particularly pp. 239-243.
were to have a fixed pronunciation with [æ] even though in informal speech [ɛ:] would be predicted on phonological grounds.

2.3. The Concept of the Idiolect

Besides the possible consequences of style-shifting on an individual speaker's linguistic system, there are other important questions to be answered in this area. Linguistic practice, especially in the United States, has vacillated between taking full cognizance of the facts of variation and glossing them over (in the hope of reducing them to the level of ignorable "noise" in a virtually exceptionless overall pattern). The latter position often approaches the point of eliminating the idiolect from discussion. Individual variation, however, is a fact, and the problem of how much of it apparently exists among neighboring speakers — along with the extent to which it is rule-governed rather than anomalously or freely variant — might be elucidated by the analysis of the complex data at hand.

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13 There has been some lack of consistency in linguistics concerning the sorts of facts which are placed under the rubric of idiolectal differences. In the present paper, we are not referring to continuous minute, barely noticeable deviations from the norms of production, but rather to discrete pronunciations — i.e., truly linguistic differences.
2.4. The Psychological Reality and Distinctiveness of the "Marginal Phoneme"\textsuperscript{14}

Past research strongly indicates that linguistically naïve native speakers can easily recognize phonemic -- or, at the very least, morphophonemic -- distinctions in their language. The short-a alternation is an instance of a phonemic distinction, since minimal pairs can be adduced. However, in recent times, Labov has introduced the concept of the marginal phoneme. Regardless of the validity of the marginal-phoneme construct, the questions which are apparently answerable here include the following:

a. can a linguistically naïve speaker recognize the relatively subtle distinctions he himself makes; and
b. will an alteration in his utterances be produced by asking him about the distinction?

It should be clear that, if the latter question is answered affirmatively, the validity of the heretofore unexceptionable commutation test must be seriously examined.


Some of the most recent and enlightening research on the status and characteristics of the marginal phoneme is described in W. Labov, "The Significance of Marginal Phonemes," forum lecture delivered at the University of Michigan, Ann Arbor, July 6, 1967.
2.5. Grammatical Conditioning

The pronunciation of auxiliaries alluded to in Section 1.3 is an obvious example of grammatical conditioning on a phonetic output. Though examples of such conditioning are becoming more frequent, largely in the framework of generative phonology, the phenomenon is by no means well understood. The well-attested examples all seem to involve a sort of part-of-speech classification; e.g., nouns may undergo a certain phonological rule while verbs do not. One can only speculate on the communicative utility and diachronic sources of such developments; however, the data under examination might plausibly be expected to illuminate the kinds of factors which can play this role, as well as, perhaps, to indicate those grammatical features which do not.

The functional role of grammatical conditioning -- if, indeed, there exists one -- is yet another problem. With respect to short a, the fact that can 'be able' normally has [æ] while can't normally has [ɛ:] could be used to distinguish utterances such as I can take it! from I can't take it! (where the [t] of take tends to neutralize the final [t] of can't),

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16 Thus Postal (P. M. Postal, Aspects of Phonological Theory, [New York: Harper & Row, 1968]) gives several examples in Iroquoian in which surface syntactic structure is crucial in the explanation of what would otherwise be a whole series of phonological anomalies. Cf., especially, the discussion of epenthesis in [kw] sequences in Mohawk, beginning on p. 246.
but there is no evidence that speakers can make use of the difference, except in the metalinguistic performance of minimal pairs.

2.6. The Psychological Reality of the Syntactic Boundary

As mentioned in Section 1.2, the short-a alternation is sensitive to the presence of syntactic boundaries (or, for the structuralist, junctures). We should be able to determine on the basis of this investigation whether the speaker's judgments concerning the existence of units below the word level in a specific case correspond to those apparently required by linguistic analysis. Furthermore, we might be able to decide whether more than one type of boundary is required for English phonological analysis.

2.7. Contributions of Distinctive-Feature Theory

Distinctive-feature theory as developed within generative phonology has unquestionably made major contributions to linguistic knowledge, but there is some question as to whether the theory as presently formulated can handle all kinds of phonological data, whether the features now being used are the "correct" ones, and whether the theory is, in general, sufficiently constrained to reflect the linguistic phenomena adequately. In later sections, distinctive-feature notation will be utilized, and the results scrutinized with these problems in mind.

2.8. Ordered Rules and the Overall Pattern

In addition to distinctive-feature theory, generative phonology has brought back into favor the concept of ordered
sets of rules in phonological descriptions, with generally positive results. The idea has been extended notably but not exclusively, by Halle, Keyser, and Saporta,\textsuperscript{17} as an explanation of dialect differences, seemingly with implicit reference to some sort of wave-theory view of the propagation of sound change and to reordering by children in their acquisition of the language. The question of whether apparently small geographical variations can be simply and effectively described by minor reorderings and adjustments from one dialect to another, or, indeed, from an overall pattern to individual dialects, will be examined.

2.9. The "Neo-Grammarians Hypothesis"

The hypothesis that "sound change admits of no exceptions" has been the cornerstone of modern historical linguistics. Nevertheless, detailed examination of attested sound changes yields numerous examples of such developments as unconditioned phonemic splits.\textsuperscript{18} The usual rejoinder involves

\begin{quote}
\textsuperscript{17}M. Halle, "Phonology in Generative Grammar," \textit{Word} XVIII (1962), pp. 54-72.


\end{quote}

\begin{quote}
\textsuperscript{18}For example, blood, good, and food have three different vocalic nuclei in Modern English, although their sources all ended in \textit{ord} in Middle English. No conditioning environments appear to give the correct prediction of all the Modern English reflexes of Middle English \textit{ord}.
\end{quote}
recourse either to the belief that with enough study the conditioning environments will be discovered, or to unattested "dialect mixture." While it is, of course, true that it is impossible to prove categorically the absence of a conditioning factor, it would appear that the burden of proof must be on the proponents of the theory, or there would be no reasonable way of falsifying it. This last position also entails that any claim of dialect mixture as an explanation must be accompanied by careful documentation. There was at the beginning of the investigation an indication that the Neo-Grammian Hypothesis could not handle the data completely.\textsuperscript{19} If this is confirmed in the final analysis, it should be made clear that it is only the absolute form of the law that is being rejected, not its use as a generally valid principle for the discovery and description of diachronic change.

\textsuperscript{19}Postal, op. cit., has come to the same position on the existence of exceptions to sound changes, and he cites several examples from various languages on pp. 261-267.
III. Data-Collection and Methodology

3.1. Preliminary Investigations

The first step undertaken in the study was a comparison of the exact facts of the alternation in the author's dialect\(^{20}\) with that in Trager's\(^{21}\), since Trager's data made up the only record in the literature which was extensive enough to make thoroughgoing analysis profitable. A great deal of divergency in detail was found between the two dialects, although they were in close agreement with respect to general tendencies. (Rules for the two dialects accompanied by a discussion of differences and ambiguous cases will be found in Section 4.1.) The results of this initial comparison implied that an investigation of geographical and idiolectal differences as against such other factors as socioeconomic status, age, and ethnic membership might prove productive.

The author was fortunate in having access to 216 tape-recorded interviews completed by William Labov on New York City's Lower East Side and used by him as the raw material for Social Stratification. In addition, data sheets giving reliable phonological transcriptions of several short-a words in reading and minimal-pair styles for almost all the interviewees were available. From these data sheets,
thirteen speakers native to New York City who showed no evidence of social correction in their pronunciation of short a in reading style were selected; these speakers were considered to be the ones most likely to reveal their uncorrected (and, therefore, presumably fundamental) phonological patterns in their interviews. Their recorded interviews were played, and all instances of short-a words were noted and rated as to whether the pertinent phones were pronounced [æ] or [ɛ:]. In the great majority of cases, the results were as predicted by the tentative rules, but several discrepancies were noted. (Detailed results and implications of this pilot study are described in Section 4.2.) There was a strong suggestion from the apparently anomalous cases that a change in the pattern was occurring among younger speakers, and that an investigation pointed toward children and young adults with the proper attention to geographical considerations held promise. This investigation was to provide the main body of data for the present study.

3.2. The Primary Study: Informant Qualification

Although it would have been extremely interesting to have had representative samplings from each geographical area, covering both sexes, all points of the socioeconomic scale, various age ranges, etc., this would have increased the sample to unmanageable size for a single investigator.

\[22\] Cf. Labov, Social Stratification, p. 321.
in a study of this type. The basic thrust of this study was to examine very closely and in depth the variations manifested within a particular, phonologically-defined class of items, rather than to compare the general outlines and interactions of a set of classes as, for instance, Labov did in *Social Stratification*. Thus, since preliminary investigations and anecdotal evidence had indicated some important geographical differences, it was decided to treat residence as the independent variable in the study. It was surmised that with speakers from all five boroughs of New York City and from towns in New Jersey any pertinent isoglosses would be easily recognizable. In addition, a group of five or more people from one specific area would be studied in order to pinpoint areas of idiolectal differences.

Variables other than geography were treated as follows:

a. Age: An upper bound of thirty years of age was established, and, in fact, no informant was older than twenty-seven. No theoretical lower bound was instituted, but a practical one arose when it became apparent that children under the age of ten had a great deal of trouble reading what turned out to be a rather difficult word list.

b. Sex: Most of the subjects selected were male, for the following two reasons. First of all, the author's anecdotal observations were in agreement with Labov's statements to the effect that women tend to be more susceptible to social correction in formal situations
than men. Secondly, on the pragmatic side, it was, of course, far easier for a male investigator to approach and interview males. Those few females in the study were friends and relatives, who could be counted on to be relatively casual, even in the interview situation.

c. Socioeconomic background: Subjects were members of the working and middle classes, primarily the former. Where a choice was available, it was the working-class person who was used, again due to the lower likelihood of social correction.

d. Ethnic and other-language background: No Negroes were included in the primary sample, since in the preliminary study it was determined that with the exception of those who had been raised in white neighborhoods within a basically white peer-group, they did not exhibit the relevant alternation. (Almost all the Negroes examined had relatively simple alternations, either with [ɛ:] before nasals and [æ] everywhere else, or with [æ] before voiceless stops and sometimes /l/ and [ɛ:] everywhere else.) Puerto Ricans were excluded from the sample because of the strong possibility of bilingual interference, especially in short-a pronunciation. All informants were required to be native speakers of English.

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23 ibid., p. 312.

24 ibid., Chap. 7 passim, particularly pp. 240-242.
and, although several spoke other languages, no evidence of pertinent interference was found.

e. Residence History: No persons who had changed residences between the ages of five and thirteen beyond a radius of a mile were included. This criterion had the detrimental effect of eliminating numerous potentially useful informants, since, unfortunately for our purposes, the population of metropolitan New York City is extremely mobile. Nevertheless, it was a necessary precaution for keeping geographical conclusions clear-cut. One subject who, it was later discovered, had moved from New Jersey to the Bronx at the age of about five and one-half is the focal point of a fairly extensive discussion in Section 4.5.2.

3.3. The Sample

No attempt was made to sample randomly, although provisions were taken to do so if it should have proven necessary. The general agreement of pronunciation in adjacent geographical locations, it turned out, made random sampling apparently unnecessary.

Informants were selected within New York City from widely separated areas, with all five boroughs having representation. In nearby New Jersey, speakers were interviewed in towns on the route along several major highways opposite northern Manhattan. Since the author could not be sure about what was normal and what was anomalous for any particular New Jersey town (unlike the situation in New York City), an attempt was made to complete at least two interviews in
each area. Five of the interviews in Upper Manhattan were
made with boys who lived within one city block of one another
and who formed the nuclei of two age-graded interrelated
peer-groups; their data were used for the study in Section
4.3.4 on idiolectal variation. In addition, three interviews
were made in Brentwood, Long Island for further comparison.

Many of the New York City informants in the study were
acquaintances of the author; most of the New Jersey residents
were not previously known to the author. Friends and acquaint-
ances had their tape-recorded interview in the author's home
or office; the others were interviewed in the schoolyards,
parks, playgrounds, etc., at or near which they were found.
These sites were selected because of absence of noise from
traffic, air conditioning, and the like (the presence of
which greatly reduces the fidelity of a tape recording);
because of the abundance of males of the required age range
and socioeconomic background available there; and because of
the generally casual atmosphere, which was conducive to the
elicitation of relatively nonformal speech.

A total of forty-three informants comprised the primary
sample; their places of residence will be found on Map 1, and
relevant demographic data is located in Appendix III.

3.4. The Interview

The interview format was modified several times during
the course of the investigation. At first, it was thought
to be feasible to elicit in "normal" speech a good many of
the lexical items of greatest interest (i.e., words exhibiting
wide variability, having apparently exceptional pronunciations, or contributing to the clarification of the rules to be formulated). Thus, for example, in order to get someone to say the word national, one could ask him about the relative merits and strengths of the major baseball (or football or basketball) leagues; to have him utter wagon, one might bring the conversation to the topic of automobile preferences, in the hope of hearing station wagon. This method was eliminated quite early since it was found that it was impossible to formulate a coherent interview which could elicit even twenty of the most important words in a reasonable amount of time without arousing the suspicious of the subjects as to the purpose of the interview, thereby tending to make their speech more formal. It was therefore decided that the first portion of the interview would be devoted to getting demographic information and nonformal speech. The second section was devoted to the reading of word lists and minimal pairs. This was the basic form of almost all the interviews. The only subsequent changes involved the addition of a few words which were found to have possible relevance, and the substitution of equivalent items in the list for certain ones that proved to be difficult for some people to read. The items appearing on the word lists of the great majority of our speakers form part of Table 3.

The interview form for the first section of the interview was adapted from the adult and teenage forms developed by William Labov and his co-workers during their research on
New York City English, 25 and was largely made up of questions having to do with childhood games and customs, fights, "the danger of death," "common sense," and the like — topics calculated to remove the constraints of formality. There was a certain looseness in the interview format since the important consideration, after the necessary demographic data were established, was the elicitation of a large body of casual speech. Interviews averaged about forty minutes in length.

IV. The Data

4.1. The Dialects of Trager and the Present Author

The differences in short-\(a\) pronunciation in the speech of George L. Trager (as evidenced in his articles already referred to in Section 1.2) and that of the author appear to be of major importance, though numerically few.

Probably the simplest way to acquaint the reader with the facts of Trager's dialect is to quote at length from his most recent paper on short \(a\):\(^{26}\)

...for the sound usually known as 'short \(a\)' and transcribed by the symbol \(\varepsilon\), I have in my English two sounds: one is a low (but not lowest) front unrounded lax vowel characteristically short, but somewhat longer before voiced sounds, which is the most usual American sound in cat, and may be transcribed by the usual symbol \(\varepsilon\); the other sound is slightly higher, tense, always long, and is like the sound used by most Americans in such a word as bare, but without the \(r\), so that bad differs from bared only in the absence of \(r\); I will here use the symbol \(\varepsilon: \) for this second sound.

The sound \(\varepsilon\) is found, with main or secondary stress, before final \([p], [t], [k], [c], [\tilde{v}], [\tilde{l}]\), before the same sounds followed by one or more other consonants, and before the same sounds followed by a vowel. Before final \([\tilde{p}], [\tilde{d}], [\tilde{g}], [\tilde{\gamma}], [\tilde{m}], [\tilde{n}], [f], [\theta], [s], [\tilde{s}], [\tilde{v}], [\tilde{z}]\), and before these sounds plus other final consonants, the sound usually found is \(\varepsilon: \); before these consonants followed by vowels, or by one other consonant, \(\varepsilon: \) is found regularly when the following vowel is one of a regular formative or paradigmatic suffix, but \(\varepsilon\) is most usual in other cases; \(\varepsilon\) is always the sound before intervocalic \(\varepsilon\) and \([\tilde{z}]\). There are no cases of \(\varepsilon: \) before final

\(^{26}\) "One Phonemic Entity," pp. 255-56. The present author has taken the liberty of substituting \(\varepsilon: \), \(\tilde{a}\), \(\tilde{z}\), \(\tilde{c}\), \(\tilde{\gamma}\) for Trager's equivalent \(\varepsilon^+, [\tilde{g}], [\tilde{z}], [\tilde{c}], [\tilde{\gamma}]\) throughout this discussion.
<table>
<thead>
<tr>
<th>Name</th>
<th>Sex</th>
<th>Age at Interview (Age 5-13)</th>
<th>Residence</th>
<th>Ethnic and Religious Background</th>
<th>Education</th>
<th>Occupation</th>
<th>Father's Occupation</th>
<th>Friend of Author's?</th>
<th>Additional Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>JB</td>
<td>M</td>
<td>12 Manhattan</td>
<td>Irish Catholic</td>
<td>6th grade</td>
<td>Student</td>
<td>Construction work</td>
<td>No</td>
<td>Brother of PB.</td>
<td></td>
</tr>
<tr>
<td>JT</td>
<td>M</td>
<td>18 Staten Island</td>
<td>W.A.S.P. College Freshman</td>
<td>Student</td>
<td>Postal clerk</td>
<td>No</td>
<td>Very suspicious; short interview.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JC</td>
<td>M</td>
<td>14 Fort Lee, New Jersey</td>
<td>Anglo-Saxon Catholic</td>
<td>8th grade</td>
<td>Student</td>
<td>&quot;Printer on [film]&quot;</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>M</td>
<td>17 West New York, New York</td>
<td>Serbian Catholic</td>
<td>High School Senior</td>
<td>Student</td>
<td>Longshoreman</td>
<td>No</td>
<td>Speaks no Serbian.</td>
<td></td>
</tr>
<tr>
<td>PE</td>
<td>F</td>
<td>24 Leonia, New Jersey</td>
<td>W.A.S.P. Graduate School (linguistics)</td>
<td>Taught H.S.; now student</td>
<td>Astronomer</td>
<td>Yes</td>
<td>Is, to a degree, &quot;remembering&quot; her native dialect for the purposes of the interview. Friend of LV.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>M</td>
<td>23 Ridgefield, New Jersey</td>
<td>Italian</td>
<td>Graduate School (history)</td>
<td>Student</td>
<td>Engineer on railroad</td>
<td>No</td>
<td>Says there was a large influx of New Yorkers to Ridgefield starting about 1950. Friend of PE.</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Sex</td>
<td>Age at Interview (Age 5-13)</td>
<td>Residence</td>
<td>Ethnic and Religious Background</td>
<td>Education</td>
<td>Occupation</td>
<td>Father's Occupation</td>
<td>Friend of Author's?</td>
<td>Additional Notes</td>
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<tr>
<td>MM</td>
<td>M</td>
<td>15</td>
<td>North Bergen, New Jersey</td>
<td>Croatian Catholic</td>
<td>High School Sophomore</td>
<td>Student</td>
<td>Salesman</td>
<td>No</td>
<td>Speaks Croatian.</td>
</tr>
<tr>
<td>HE</td>
<td>M</td>
<td>12</td>
<td>North Bergen, New Jersey</td>
<td>Italian Catholic</td>
<td>7th grade Student</td>
<td>Owns store, works in a market</td>
<td>No</td>
<td>Speaks some Italian</td>
<td></td>
</tr>
<tr>
<td>JD</td>
<td>M</td>
<td>14</td>
<td>Secaucus, New Jersey</td>
<td>German Protestant</td>
<td>9th grade Student</td>
<td>Truck-driver</td>
<td>No</td>
<td>Very relaxed; uninhibited interview.</td>
<td></td>
</tr>
<tr>
<td>BB</td>
<td>M</td>
<td>16</td>
<td>Secaucus, New Jersey</td>
<td>German</td>
<td>High School Sophomore</td>
<td>Student</td>
<td>Truck-driver</td>
<td>No</td>
<td>-----</td>
</tr>
<tr>
<td>JM</td>
<td>M</td>
<td>16</td>
<td>Ridgefield Park, New Jersey</td>
<td>Irish Catholic</td>
<td>High School Junior</td>
<td>Student</td>
<td>Lawyer</td>
<td>No</td>
<td>Friendly but reserved.</td>
</tr>
<tr>
<td>JW</td>
<td>M</td>
<td>18</td>
<td>Dumont, N.J. to age 5; thereafter Bronx. (cf. Section 4.5.8)</td>
<td>Jewish</td>
<td>College Freshman</td>
<td>Student</td>
<td>Plumber and contractor</td>
<td>Yes</td>
<td>Speaks Yiddish fluently. Brother of NW.</td>
</tr>
<tr>
<td>Name</td>
<td>Sex</td>
<td>Age at Interview (Age 5-13)</td>
<td>Residence (New Jersey)</td>
<td>Ethnic and Religious Background</td>
<td>Education</td>
<td>Occupation</td>
<td>Father's Occupation</td>
<td>Friend of Author's?</td>
<td>Additional Notes</td>
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<tr>
<td>EX</td>
<td>M</td>
<td>15</td>
<td>Saddle River, New Jersey</td>
<td>Italian</td>
<td>High School</td>
<td>Student</td>
<td>Owns turret-lathe shop</td>
<td>No</td>
<td>Interview incomplete because of subject's inability to read word list. Brother of SX.</td>
</tr>
<tr>
<td>SX</td>
<td>M</td>
<td>18</td>
<td>Saddle River, New Jersey</td>
<td>Italian</td>
<td>College Sophomore</td>
<td>Student</td>
<td>Owns turret-lathe shop</td>
<td>No</td>
<td>Very suspicious and formal. Brother of EX.</td>
</tr>
<tr>
<td>LW</td>
<td>M</td>
<td>15</td>
<td>Hackensack, New Jersey</td>
<td>Anglo-Saxon</td>
<td>9th grade</td>
<td>Student</td>
<td>Bus driver</td>
<td>No</td>
<td>Relaxed.</td>
</tr>
<tr>
<td>PV</td>
<td>M</td>
<td>15</td>
<td>East Rutherford, New Jersey</td>
<td>Italian</td>
<td>High School Sophomore</td>
<td>Student</td>
<td>Bartender</td>
<td>No</td>
<td>Friend of CP.</td>
</tr>
<tr>
<td>CP</td>
<td>M</td>
<td>15</td>
<td>East Rutherford, New Jersey</td>
<td>Italian</td>
<td>High School Sophomore</td>
<td>Student</td>
<td>Office manager</td>
<td>No</td>
<td>Speaks a little Italian. Friend of PV.</td>
</tr>
<tr>
<td>PT</td>
<td>M</td>
<td>14</td>
<td>Rutherford, New Jersey</td>
<td>Polish-German</td>
<td>9th grade</td>
<td>Student</td>
<td>Documentation work for ship line</td>
<td>No</td>
<td>Friend of MP, who he says &quot;lives on the other side of tracks.&quot;</td>
</tr>
<tr>
<td>Name</td>
<td>Sex</td>
<td>Age at Interview (Age 5-13)</td>
<td>Residence</td>
<td>Ethnic and Religious Background</td>
<td>Education</td>
<td>Occupation</td>
<td>Father's Occupation</td>
<td>Friend of Author's?</td>
<td>Additional Notes</td>
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</tr>
<tr>
<td>MP</td>
<td>M</td>
<td>14</td>
<td>Rutherford, New Jersey</td>
<td>Spanish-Italian</td>
<td>9th grade</td>
<td>Student</td>
<td>Juvenile detective</td>
<td>No</td>
<td>Incomplete interview, since subject is not a good reader and refused to read some of the word list. Friend of PT.</td>
</tr>
<tr>
<td>LB</td>
<td>M</td>
<td>15</td>
<td>Passaic, New Jersey</td>
<td>Italian Catholic</td>
<td>High School Sophomore</td>
<td>Student</td>
<td>Insurance agent</td>
<td>No</td>
<td>Relaxed. Speaks a little Italian. Friend of JaW.</td>
</tr>
<tr>
<td>BS</td>
<td>M</td>
<td>13</td>
<td>Passaic, New Jersey</td>
<td>Anglo-Saxon</td>
<td>7th grade</td>
<td>Student</td>
<td>?</td>
<td>No</td>
<td>Very poor on distinguishing minimal pairs.</td>
</tr>
<tr>
<td>JW</td>
<td>M</td>
<td>13</td>
<td>Passaic, New Jersey</td>
<td>Anglo-Saxon</td>
<td>8th grade</td>
<td>Student</td>
<td>Electrician and technician</td>
<td>No</td>
<td>Friend of LB; wanted LB to read word list for him; therefore, interview relatively incomplete.</td>
</tr>
<tr>
<td>SA</td>
<td>M</td>
<td>16</td>
<td>Paterson, New Jersey</td>
<td>Jewish</td>
<td>High School Senior</td>
<td>Student</td>
<td>Small shop-keeper</td>
<td>No</td>
<td>Friendly and interested. Understands a little Yiddish.</td>
</tr>
<tr>
<td>Name</td>
<td>Sex</td>
<td>Age at Interview (Age 5-13)</td>
<td>Residence</td>
<td>Ethnic and Religious Background</td>
<td>Education</td>
<td>Occupation</td>
<td>Father's Occupation</td>
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</tr>
<tr>
<td>JS</td>
<td>M</td>
<td>16</td>
<td>Brentwood, Long Island</td>
<td>Italian Catholic</td>
<td>High School Junior</td>
<td>Student</td>
<td>Was technician in airplane factory; now part-time artist</td>
<td>No</td>
<td>Trying very hard to impress.</td>
</tr>
<tr>
<td>CK</td>
<td>M</td>
<td>14</td>
<td>Brentwood, Long Island</td>
<td>W.A.S.P.</td>
<td>9th grade</td>
<td>Student</td>
<td>Mechanic</td>
<td>No</td>
<td>Friend of JH.</td>
</tr>
<tr>
<td>JH</td>
<td>M</td>
<td>15</td>
<td>Brentwood, Long Island</td>
<td>Anglo-Saxon Catholic</td>
<td>9th grade</td>
<td>Student</td>
<td>Usually unemployed; occasional musician</td>
<td>No</td>
<td>Very friendly. Poor reader. Friend of CK.</td>
</tr>
</tbody>
</table>

* Members of a peer group.
WORKS CITED


Ferguson, C. "'Short a' in Philadelphia English," [1968]. (Mimeographed.)


___________. "The Significance of Marginal Phonemes." Forum lecture delivered at the University of Michigan, Ann Arbor, July 6, 1967.


________. "One Phonemic Entity Becomes Two: The Case of 'Short a'." American Speech, XV (1940), 255-258.
or medial [p], [t], [k], [č], [ŋ], [l]; but there are some cases of [æ] before the other finals. Before intervocalic [r], [ɛ:] is found only in paradigmatic derivatives of words ending in [ɛ:ɹ], and [æ] is found elsewhere.

In the initial syllables ab-, ad-, ag-, in words of Latin origin, the sound is [æ] (abdicate, admiral, aggregate), and in all unstressed syllables that do not have [æ] for a spelled a, [æ] is found rather than [ɛ:], regardless of the following consonant.

Contrasting pairs can be found for the positions in which both sounds are possible; in the following the first of each pair has [æ], the second [ɛ:]: bade, bad; adze, adds; can 'be able', can 'tin container', 'to put in tins'; have, halve; abbey, Abby (short for Abigail, which, however, has [ɛ:]); padding (noun), padding (participle of to pad); adder (a snake), adder 'one who adds'; manor and manner against manner 'one who mans'; having, halving.

Non-minimal pairs are: had, bad; has, jazz; hammer, slammer 'one who slams'; baffle, laughing; castle, passing; passion, fashion (but passion also has [ɛ:] in certain contexts); dazzle, razzing. Pairs with r are: carry, Carey; marry, Mary; here there is the further contrast with words spelled with e: marry, Mary, merry; fairy [ɛ:], ferry.

.................................
...family has [ɛ:] in my speech, contrary to any rule that can be stated, but has [æ] in my wife's. Not even all the words listed will have the same one of the two sounds among all speakers who make the distinction.

It will be noted that the rules for short-a assignment in Trager's dialect, and indeed for any other relevant ones, may be looked upon either as tensing and raising [æ] in certain environments or as laxing and lowering [ɛ:] in the complementary ones. However, as Trager himself says:

From the behavior of the other short vowels of English, [ɪ], [ɛ], [æ], [ʊ], [ʌ], and from the pronunciation of [æ] in some forms of English, we know that originally there was only one phoneme,
and only one sound, which was [æ] or nearer to
[ə] than to [ɛ:].

The present author is in agreement, since all general
linguistic tendencies and what little specific evidence there
is point to raising rather than lowering phenomena for tense
and long vowels. We will therefore incline toward raising
rules herein.

We may summarize the data for the raising of [æ] (dis-
regarding questions concerning phonemicization, to be dealt
with in Section 5.3) as follows:

Under primary or secondary stress, and not in auxil-
iaries or Latinate prefixes ending in stops, [æ]
becomes [ɛ:] before fricatives, voiced stops, [m],
and [n] immediately followed by one or more consonants
or by a "regular or paradigmatic suffix."

Translating to the more rigorous framework of generative
phonology we get:

---

27 Ibid., p. 256.

28 It will be noticed that Trager is self-contradictory
on the pronunciation of Carey, Mary, fairy: on the one hand,
he says (vide supra) "Before intervocalic [r], [ɛ:] is found
only in paradigmatic derivatives of words ending in [ɛ:r],
..."; on the other hand, he tells us that these three words
have [ɛ:], and they obviously do not meet his criterion.
These words are, of course, germane to the present dis-
cussion, since it will be recalled from Section 1.6 that
they do not represent short a in Trager's dialect. Nor
will we cavil about the fact that admiral is at least pri-
marily of Arabic provenience.

29 The formalization used is that of N. Chomsky and
M. Halle in The Sound Pattern of English (New York, Evanston,
and London: Harper & Row, 1968). (Hereinafter referred to as
Sound Pattern.) It should be remembered, however, that this
portion is partially historiographical. Thus most of the
insights which appeared subsequently are not included in the
treatment of the preliminary studies; they will be included,
where required, in the revised forms of the rules which are
in the sections devoted to the analysis of the data from the
primary study.
Rule 1

\[
\begin{align*}
\text{[+vcl]} & \
\text{[+tense]} & \\
\text{[+nas]} & \
\text{[+cont]} & \
\text{[+cons]} & \\
\text{[-seg]} & \
\text{[-snr]} & \
\text{[-back]} & \\
\text{[-LAT]} & \\
\text{[-cont]} & \\
\text{-low} & \\
\text{-back} & \\
\text{-AUX} & \\
\gamma \text{stress} & \\
\end{align*}
\]

Condition: \( \gamma = \left\{ \begin{array}{c} 1 \\ 2 \end{array} \right\} \)

Rule 1 handles all the data mentioned in the quote from Trager's article except bade, adze, and fashion, and possibly Abby, padding (noun), passion, and family. In addition Trager mentions yeah\(^{30}\) as having [\(\epsilon:\)] as it does universally in American English.

One might treat Abby as being composed of Ab+-y, in which case it would conform to Rule 1. Padding (noun) would have to have no internal boundary if it is to fit the rule. For Trager himself, family would be regular if he had a dissyllabic pronunciation; likewise, his wife's form would be regular if it had three syllables. Unfortunately, Trager supplies us with no clues here. Passion apparently is

\(^{30}\)"One Phonemic Entity," p. 256.
inherently variable (according to meaning or collocation?) for Trager; again, however, the description given us is not precise enough for anything more than speculation.

It is possible to attempt to account for bade with [æ] in two different ways: probably the more convincing one is to treat it as an importation from formal speech, where [æ] is to be expected for many speakers; the other possibility has to do with the fact that bade is an irregular past tense (perhaps parallel to had), and therefore to speak of a class of "irregular verb forms" rather than auxiliaries in our rules. With adze we face a problem of a partially different sort. It is true that we might again appeal to a dialect-borrowing explanation, but, on the other hand, the word presents a unique phonological environment -- a monomorphemic voiced obstruent cluster followed by a boundary -- which could be relevant. The word fashion seems to be a solid exception to our rule, and, taken together with the variability attested for passion, suggests the possibility that [ʃ], even when immediately followed by a vowel, might serve as an environment for tensing.

We can take care of yeah with very little difficulty if we decide that it belongs in the normal linguistic system. Our rule becomes:

Under primary or secondary stress and not in auxiliaries or Latinate prefixes ending in stops, [æ] becomes [æ] before a word boundary or before fricatives, voiced stops, [m], and [n] immediately followed by one or more consonants or by a "regular or paradigmatic suffix."

In our notation:
Rule 1.1

\[
\begin{align*}
\text{[+vcl] } & \quad \rightarrow \quad \text{[+tense]} \quad \begin{cases}
\text{[-cont]} \\
\text{+vce} \\
\text{-LAT} \\
\end{cases} \\
\text{[+cons]} \quad \begin{cases}
\text{[-seg]} \\
\text{[-sr]} \\
\text{+nas} \\
\text{-back} \\
\end{cases}
\end{align*}
\]

Condition: \( \gamma = \left\{ \frac{1}{2} \right\} \)

For the corpus presented by Trager, there was, by and large, agreement with the present author's dialect. The following points of difference and interest emerged, however. For the writer, stress seems to be irrelevant; \underline{Abby} has \( \underline{\text{[a]} \text{]} \); \underline{padding} (noun) has \( \underline{\text{[ɛ:]}} \); \underline{fashion} can have \( \underline{\text{[ɛ:]}} \) or \( \underline{\text{[æ]} \text{]} \) with equal naturalness, as can \underline{jazz}; \underline{family} has \( \underline{\text{[æ]} \text{]} \) when pronounced as three syllables (the formal pronunciation), but \( \underline{\text{[ɛ:]}} \) in the more normal two-syllable pronunciation.

\[31\] At least up to this point in the analysis, we have no reason to distinguish boundary types; thus the global "[-seg]" has been employed.
Additional data were, of course, available through introspection. It was discovered that not only are auxiliaries pronounced with [ə] in the author’s dialect (excepting can’t and shan’t), so also are all other relevant words which might be termed “particles”; the class includes an, than, as, and and. Moreover, the Latinate-prefix class seemed to be another special case, since absinthe, Abner, and the first syllable of Afghan also have [ə]. One might well conclude that in the position before a consonant cluster one or more of whose members is voiced stop, tensing and raising do not occur. This view would preclude the existence of a boundary (or, at least, the kind of boundary referred to in the rules heretofore) after the prefix of abdicate, aggregate, etc. On the other hand, a boundary would have to exist before the n of can’t, shan’t in order to explain the vowel there.

Furthermore the author’s dialect has forms such as athlete and canyon with [ə], a fact which led to the conclusion that a consonant followed by a liquid or glide does not establish an environment for raising either.

The tentative rule (subject to modification) which was projected at the time is:

In "non-particles," before fricatives, voiced stops, [m], and [n] followed immediately by a boundary, before a boundary alone, before [m] and [n] followed by a true consonant, or before a voiceless obstruent cluster, [ə] becomes [ɛ:].

32 This treatment would also explain the otherwise exceptional vowel of adze.
Our formulation in generative phonology, using the invented feature [+ WEAK] to denote + "Particleness," would be:

Rule 2

\[
\begin{align*}
\text{[+vocl]} & \quad \rightarrow [+\text{tense}] \\
-\text{back} & \quad \\
+\text{low} & \\
-\text{WEAK} & \\
\end{align*}
\]

\[
\left\{ \\
\begin{align*}
\text{[+vce]} & \\
-\text{snr} & \\
\end{align*}
\right\} \\
-\text{seg} \\
\left\{ \\
\begin{align*}
\text{[+nas]} & \\
-\text{back} & \\
\end{align*}
\right\}
\]

It will be seen that Rules 1.1 and 2 are rather dissimilar; this is true even though modifications were made to take care of a mere handful of words. Looking at it from the point of view of cross-dialectal investigations, we would hope to be able to describe very similar dialects with very similar sets of rules; that desirable situation does not obtain here. We might appeal to the position that Trager's description leaves quite a bit to the imagination; and, indeed, the present author believes that had Trager been a bit more explicit in his statements and varied in his examples, Rule 1.1 might resemble Rule 2 more closely. But that is just speculation; we shall, of course, accept Trager's data as they are.
4.2. The Lower East Side Speakers

Rule 2 was tentatively established as the basic tensing rule for [æ] in New York City, and the dialects of thirteen speakers from the Lower East Side of Manhattan were examined (as described in Section 3.1) in order to see how well they matched this model.

It had been found by Labov\textsuperscript{33} that the present author's uncertainty about the vowels of jazz and fashion was mirroring a fact concerning the population as a whole: the relevant items were being pronounced very heterogeneously. Thus, a person might use [ɛ:] for jazz and national, but [æ] for razz and rational; someone else might use [ɛ:] for razz and [æ] for the other three items; and so on. The variation before final[z] and intervocalic [ʃ] was also found in speakers examined anecdotally in preliminary research. It was also discovered that by far the most common vowel in the first syllable of avenue was [ɛː], contrary to the prediction of both Rule 1.1 and Rule 2. (The present author's dialect was in agreement on this apparent exception, even though all other relevant items -- e.g., avid, average, avalanche, tavern -- had [æ] before [v] when not followed by a boundary.)

In nearly all other cases, results for our thirteen speakers were as predicted by rule; however, the following discrepancies (and these only, except for the ones already mentioned) were noted.

\textsuperscript{33} Personal communication.
<table>
<thead>
<tr>
<th>Word</th>
<th>Total # of occurrences</th>
<th>Form expected from rules</th>
<th># of unexpected forms</th>
<th>Total # of speakers using word</th>
<th># of speakers with unexpected form</th>
</tr>
</thead>
<tbody>
<tr>
<td>has</td>
<td>16</td>
<td>[æ]</td>
<td>2</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>have</td>
<td>29</td>
<td>[æ]</td>
<td>2</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>can 'be able'</td>
<td>20</td>
<td>[æ]</td>
<td>8</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>imagine</td>
<td>5</td>
<td>[æ]</td>
<td>(2)</td>
<td>3</td>
<td>(2)</td>
</tr>
<tr>
<td>rather</td>
<td>10</td>
<td>[æ]</td>
<td>1</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>fascinated</td>
<td>1</td>
<td>[æ]</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>wagon</td>
<td>2</td>
<td>[æ]</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>manufacture</td>
<td>1</td>
<td>[æ]</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>managed</td>
<td>7</td>
<td>[æ]</td>
<td>2</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>passage</td>
<td>1</td>
<td>[æ]</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>passé</td>
<td>1</td>
<td>[æ]</td>
<td>(1)</td>
<td>1</td>
<td>(1)</td>
</tr>
</tbody>
</table>

The explanation for some of these discrepancies seems fairly clear. With has, have, can 'be able' we are probably seeing a trend towards the elimination of the "[-WEAK]" constraint of Rule 2; i.e., a generalization of the phonological environment at the expense of a lexically or syntactically marked class. For imagine (and conceivably for rather) we might adduce a morpheme boundary after the [ʃ] (and the [ʃ]); but if we do, why is there then no corresponding boundary after the [s] of passage and passé? For fascinated, wagon, manufacture, and managed, there seems to be little choice but
to notice a small tendency towards the establishment of the position before [s], [g], [n] as an environment for tensing, regardless of what follows them. A parallel explanation would also be tenable for imagine and rather. Passage and passé would be the result of a more exact specification of phenomena at boundaries. (These areas were included, of course, in the primary study, and particular items and word classes are discussed in detail throughout Section IV.)

Despite the relative sparseness of data available in these thirteen interviews, they led to some far-reaching conclusions. It is of more than passing interest to note that just about half of the apparent disagreements with Rule 2 that are listed in Table 2 come from the recordings of the speakers under twenty-five years of age; these make up only five of the thirteen speakers and they are represented by comparatively little speech, since all but one of them were secondary interviewees (that is, older members of their families were the primary speakers on the tapes and answered the great majority of the interview questions).

All of this seems to suggest a diachronic facet of the synchronic description. In other words, we may view the data as the ongoing portion of a sound change. Indeed, the data showing razz and/or jazz with [æ] (apparently not because of social correction) may be viewed as a relic of a very similar, though chronologically earlier, occurrence. Of our thirteen speakers, seven used the word jazz; only two had [æ], and they were the oldest. This fact strongly
suggests that even the part of Rule 2 producing [ɛː] before word-final voiced fricatives has only recently been estab-
blished.\textsuperscript{34}

It is clear from Labov's studies\textsuperscript{35} that younger
speakers tend to produce higher phones for the class of
words with [ɛː]; that is to say that his evidence points to
a phonetic shift proceeding upward in time. The evidence
from the present study indicates that, moreover, small word
classes and particular words are shifting upward from the
[æ] to the [ɛː] class, and that, furthermore, except for
stylistic social correction, there are no shifts from [ɛː]
to [æ]. The implications for the assumption associated with
the Neo-Grammarians that word classes shift as a whole should
be clear. Sound change might well be a process in which small
groups of similar words and particular items shift one by one.
In the long run, this might possibly yield a situation in
which word classes have, apparently, changed as a whole; but
it might easily present us with a good deal of divergence
from general regularity. This last situation is one that
has often in the past been explained by resorting to "dialect
mixture," "analogy," etc. The contention here would be that
in many cases it is the result of a very normal variety of

\textsuperscript{34} Cf. Section 4.4.1 (b).

\textsuperscript{35} Cf., especially, \textit{Social Stratification}, Chapter IX, passim.
sound change, perhaps frozen in a usually transitional state. 36

In the tensing of [a] it seems that we are describing a sound change of this type in progress. Thus, for example, despite some instances of shift to [ɛ:] in imagine; national; and managed, manufacture, we find no shift in the respectively corresponding vowels of graduate, exaggerate, magic; rational; and January. (January was recorded from nine of our thirteen speakers -- including the two with [ɛ:] in managed -- all of whom used only [a].)

We are now in a position to benefit from the more extensive data of the primary investigation.

4.3. Speakers in the Primary Study from New York City

We will discuss the data for the individual speakers from all five boroughs of New York City, and will attempt a synthesis in Section 4.4. For ease of reference we will set up the following classifications of environments of short a; these will be used hereinafter, with modifications where necessary:

---

<table>
<thead>
<tr>
<th>Reference #</th>
<th>Description</th>
<th>Examples in word list, rhymes, and minimal pairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>Voiceless stops (incl. affricates)</td>
<td>cap, catch, black, chapter, rapid, matter, hatchet, manufacture, latter, collapse</td>
</tr>
<tr>
<td>Class 2</td>
<td>[l]</td>
<td>pal, talcum, salve&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Class 3</td>
<td>[ŋ]</td>
<td>bang, tank, tranquilizer, banquet</td>
</tr>
<tr>
<td>Class 4</td>
<td>Final voiced stops (incl. affricates)</td>
<td>bag, cab, grab, badge, bad&lt;sup&gt;b&lt;/sup&gt;, mad, pad, sad</td>
</tr>
<tr>
<td>Class 5</td>
<td>Voiced stops followed by a vowel</td>
<td>badger, cabinet, abbey&lt;sup&gt;b&lt;/sup&gt;, ladder&lt;sup&gt;b&lt;/sup&gt;, dagger, imagine, wagon, magic</td>
</tr>
<tr>
<td>Class 6</td>
<td>Voiced stops followed by a consonant</td>
<td>absence, abdicate, Abner, aggregate, absinthe, fabric, admonition, adz&lt;sup&gt;c&lt;/sup&gt;, establish</td>
</tr>
<tr>
<td>Class 7</td>
<td>Final voiced fricatives</td>
<td>jazz&lt;sup&gt;b&lt;/sup&gt;, razz, salve, halve</td>
</tr>
<tr>
<td>Class 8</td>
<td>Voiced fricatives followed by a vowel</td>
<td>'casually, travel, dazzle, lather, rather, tavern, avenue, average&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Class 9</td>
<td>Voiced fricatives followed by a consonant</td>
<td>gas, wrath, bath, half, ashcans&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td>Class 10</td>
<td>Final voiceless fricatives</td>
<td>placid, tassels, mathematics, traffic, fascinate, chassis, fashion&lt;sup&gt;b&lt;/sup&gt;, pistachio, cashew, C-rations</td>
</tr>
<tr>
<td>Class 11</td>
<td>Voiceless fricatives followed by a vowel</td>
<td>afternoon, master, grasp</td>
</tr>
<tr>
<td>Class 12</td>
<td>Voiceless fricatives followed by a voiceless consonant</td>
<td></td>
</tr>
<tr>
<td>Reference #</td>
<td>Description</td>
<td>Examples in word list, rhymes, and minimal pairs</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Class 13</td>
<td>Voiceless fricatives followed by a voiced consonant</td>
<td>Afghan, Catholic, mathematics</td>
</tr>
<tr>
<td>Class 14</td>
<td>Final [m], [n]</td>
<td>Afghan, (tin) can, ham, man</td>
</tr>
<tr>
<td>Class 15</td>
<td>[m], [n] followed by a vowel</td>
<td>family, hammer, planet</td>
</tr>
<tr>
<td>Class 16</td>
<td>[m], [n] followed by a liquid or glide</td>
<td>family, manual, manufacture, canyon, annual</td>
</tr>
<tr>
<td>Class 17</td>
<td>[m], [n] followed by an obstruent</td>
<td>tangerine, hand, ramp, dance, aunt, hamster, Crandall</td>
</tr>
<tr>
<td>Class 18</td>
<td>Nonfinal voiced stops followed by a (possible) syntactic boundary</td>
<td>padding, imagine, sadden, baggy, cabbie, adds</td>
</tr>
<tr>
<td>Class 19</td>
<td>Nonfinal voiced fricatives followed by a syntactic boundary</td>
<td>paths, jazzy, raspberry, dazzle</td>
</tr>
<tr>
<td>Class 20</td>
<td>Nonfinal voiceless fricatives followed by a syntactic boundary</td>
<td>passage, gasoline, cashier, bashful, classics, paths, brassy, passenger, ashcans, classy</td>
</tr>
<tr>
<td>Class 21</td>
<td>Nonfinal [m], [n] followed by a syntactic boundary</td>
<td>ashcans</td>
</tr>
<tr>
<td>Class 22</td>
<td>Syntactic boundary</td>
<td>yeah, can't, shan't</td>
</tr>
<tr>
<td>Class 23</td>
<td>&quot;Weak&quot; words</td>
<td>had, and, than, am, has, can 'be able', as, have</td>
</tr>
<tr>
<td>Reference #</td>
<td>Description</td>
<td>Examples in word list, rhymes, and minimal pairs</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Class 24</td>
<td>Hypocoristic forms, shortenings, and invented items</td>
<td>Abby, Lassie, Brad, math., &quot;Vad&quot;</td>
</tr>
<tr>
<td>Class 25</td>
<td>Irregular verb forms</td>
<td>forbade</td>
</tr>
</tbody>
</table>

\[a\] Pronunciations with the \( l \) realized phonetically were much commoner than one might expect.

\[b\] Items with this superscript appear both in word list and in rhymes or minimal pairs.

\[c\] The form \( adz \) rather than \( adze \) was selected to help eliminate disyllabic pronunciations for speakers who were unacquainted with the word.

\[d\] All pronunciations in the sample were, not unexpectedly, disyllabic.

\[e\] We include ashcans in classes 10 and 20 (and also, of course, 21).

\[f\] Since we find four-syllable and three-syllable pronunciations (i.e., "math'matics"), we include this word in classes 11 and 13.

\[g\] As with average, only disyllabic pronunciations were encountered.

\[h\] Both two- and three-syllable forms are found.

\[i\] Since the presence of a boundary in words with this superscript is particularly doubtful, we have included them in the appropriate classes for words with and without an internal boundary in the relevant position.

\[j\] Forms ending in [\( \theta s \)] as well as [\( \theta z \)] occur.

\[k\] Forbade rather than the (for our purposes) equivalent bade was used since it was apparently a more familiar word for many speakers; nevertheless, many instances of the spelling pronunciation with [\( \theta r \)] and the like were given.
Classes will be referred to throughout the text by their reference numbers; a typical example of the class, printed in capital letters and enclosed by parentheses will also be given as a mnemonic, except in those cases where particular items in the class are individually discussed.

4.3.1. Brooklyn

Our three Brooklyn speakers\textsuperscript{37} -- SSi, SE, and JK -- seem to be typical of New York City speech insofar as short-\textipa{a} pronunciation is concerned, and Rule 2 appears to reflect their short-\textipa{a} pattern reasonably well. Thus we find, as expected, only [\textipa{æ}] in classes 1 (CAP), 2 (PAL), 3 (BANG), 6 (ABDICATE), 9 (AVERAGE), 13 (AFGHAN), 15 (PLANET), and 23 (HAD); and only [\textipa{ɛː}] in classes 4 (CAB), 14 (MAN), 17 (DANCE), 21 (ASHCANS), and 22 (YEAH). This is true for reading, minimal pairs and rhymes, and normal speech. In class 12, we have absolute agreement with the expected [\textipa{ɛː}] except for one utterance of bastard with [\textipa{æ}] by SSi which is spoken with extremely emphatic stress. Whether this shows a tendency toward the use of [\textipa{æ}] in heavily stressed or restressed items, or some sort of stylistic shift (or, possibly, a combination of the two) is a moot point. In class 8, we find in all items for all three speakers the predicted [\textipa{æ}], except for avenue, which is pronounced with [\textipa{ɛː}] in reading and in each instance in speech (three for SE, three for JK, and five for SSi).

\textsuperscript{37}Cf. Appendix III for demographic, sociological, etc., data for all informants in the primary sample.
It would appear that we have little choice but to view avenue as a lexical exception and to separate it from class 9 into what we shall call "exceptions." In class 10, we again have agreement on all but one item: wrath. All three speakers use [ɛ:] for the other words, but we have a split on wrath, where SSi and SE use [æ] but JK uses [ɛ:]. It might well be that wrath is an importation from the more formal lexicon; in any event we shall put it in the exceptions class, at least temporarily. The situations in the other classes are of a rather different sort. In classes 7 and 11, we find pretty much what we found in the Lower East Side data. Thus, in class 7, we find that SSi and JK use [ɛ:] in jazz and razz, but that SE uses either [æ] or [ɛ:] in jazz, but [ɛ:] in razz. Furthermore, we find unexpectedly that, though JK has [ɛ:] in both salve and halve, SSi shows variation in salve and [ɛ:] in halve, and SE uses [æ] in salve and [ɛ:] in halve.

Because of this extreme variability across and within our speakers, we shall in further discussions distinguish the environments before final [z] and [v] as class 7a and class 7b, respectively. What we find in class 11 is quite similar: the expected [æ] is found in all speakers except before [ʒ] followed by a vowel. In this position there is tremendous variation -- just as there was for our Lower East Side population. The extent of the variation involved will probably be best appreciated when presented in tabular form:
TABLE 4

PHONES BEFORE PREVOCALIC [æ],
FOR THREE BROOKLYN SPEAKERS

<table>
<thead>
<tr>
<th>Items</th>
<th>SSi</th>
<th>SE</th>
<th>JK</th>
</tr>
</thead>
<tbody>
<tr>
<td>fashion</td>
<td>[æ ]</td>
<td>~</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>passion</td>
<td>[æ ]</td>
<td>[æ ]</td>
<td>~</td>
</tr>
<tr>
<td>rational</td>
<td>~</td>
<td>[æ ]</td>
<td>[æ ]</td>
</tr>
<tr>
<td>national</td>
<td>[æ ]</td>
<td>[æ ]</td>
<td>[æ ]</td>
</tr>
<tr>
<td>pistachio</td>
<td>[ɛ ]</td>
<td>~</td>
<td>[æ ]</td>
</tr>
<tr>
<td>cashew</td>
<td>~</td>
<td>[æ ]</td>
<td>[æ ]</td>
</tr>
<tr>
<td>C-rations</td>
<td>[æ ]</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

^a The "swung dash" (~) is used herein to indicate variation.

^b Both SE and JK pronounce C-rations so as to rhyme with, say, stations; the item is, therefore, for them irrelevant to our present discussion.

We will therefore split class 11 into two smaller groups — those words with short a before [s] followed by a vowel (to be called class 11a) and the remainder with short a before [f], [θ], [s] followed by a vowel (to be called class 11b).

We find unexpected variation in class 5, as is seen from Table 5.
<table>
<thead>
<tr>
<th>Items (Reading and Conversation)</th>
<th>SSI</th>
<th>SE</th>
<th>JK</th>
</tr>
</thead>
<tbody>
<tr>
<td>cabinet</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>abbey</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>imagine</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>magic</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>ladder</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>rabbit</td>
<td>---</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>graduate</td>
<td>---</td>
<td>[æ]</td>
<td>---</td>
</tr>
<tr>
<td>Madison</td>
<td>---</td>
<td>[æ]</td>
<td>---</td>
</tr>
<tr>
<td>dabble</td>
<td>---</td>
<td>[æ]</td>
<td>---</td>
</tr>
<tr>
<td>Adam</td>
<td>---</td>
<td>[æ]</td>
<td>---</td>
</tr>
<tr>
<td>adjectival</td>
<td>[æ]</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>badger</td>
<td>[ɛː]</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>dagger</td>
<td>[ɛː]</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>wagon</td>
<td>[ɛː]</td>
<td>~</td>
<td>[æ]</td>
</tr>
</tbody>
</table>

It will be noted that only in the last three items of the table do we find unpredicted forms. Furthermore, JK exhibits none of these and SE shows only a trace of them. Interestingly enough, however, SE stated (without prompting) that she had heard dagger pronounced with [ɛː] at home, but that she wouldn't use that form. SSI shows discrepancies in all
three words. There does not appear to be any specific feature to distinguish these three items from the others in the group, though we do see both of our items with short a before [g] followed by a vowel behaving unpredictably. We will therefore tentatively place them as possible lexical exceptions (to be called class 5a) apart from the rest of the class (class 5b).

Variation is also present in class 16, as evidenced in Table 6.

### Table 6

<table>
<thead>
<tr>
<th>Items (Reading and Conversation)</th>
<th>SSI</th>
<th>SE</th>
<th>JK</th>
</tr>
</thead>
<tbody>
<tr>
<td>family</td>
<td>[ɛː]</td>
<td>[ɛː]</td>
<td>[ɛː]</td>
</tr>
<tr>
<td>manual</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>manufacture</td>
<td>[ɛː]</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>annual</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>January</td>
<td>[æ]</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>granulated</td>
<td>[æ]</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Danube</td>
<td>---</td>
<td>[æ]</td>
<td>---</td>
</tr>
<tr>
<td>Stanley</td>
<td>---</td>
<td>[ɛː]</td>
<td>---</td>
</tr>
<tr>
<td>Daniels</td>
<td>---</td>
<td>[ɛː]</td>
<td>---</td>
</tr>
</tbody>
</table>
It is obvious that \textit{family} is a lexical exception of the same sort as \textit{avenue}; we will therefore put it in the "exceptions" class. The rest of class 16 will apparently have to be reported individually.

Class 18 (BAGGY) has the expected [ε:] in all instances, except that \textit{imagine} has [æ] for all three speakers. (Cf. Table 2.) Evidently, it does not have the requisite syntactic boundary (at least for these informants) and will henceforth appear only in class 5.

Class 19 shows a couple of interesting points. (See Table 7 below):

\begin{table}
\centering
\begin{tabular}{|l|c|c|c|}
\hline
\textbf{Items} & \textbf{ ślśśi} & \textbf{SE} & \textbf{JK} \\
\hline
paths & [ε:] & [ε:] & [ε:] \\
jazzy & [ε:] & [ε:] & [ε:] \\
raspberry & [ε:] & [æ] & [ε:] \\
\hline
\end{tabular}
\caption{Phones before nonfinal voiced fricatives followed by a boundary, for three Brooklyn speakers}
\end{table}

\textsuperscript{a}SE does indeed use [ε:] in this item. However, she does not voice the final obstruent cluster.
Clearly, **dazzle** is precisely parallel to **imagine**. It will hereinafter appear only in class 8 (LATHER). Taken with her unsolicited statement to the effect that she had heard **raspberry** pronounced with [ɛ:] but does not herself pronounce it that way, and with her use of [ɛ:] in **razz**, **SE's** use of [æ] in **raspberry** is another strong confirmation of the inherent variability in the production of short a before [z] followed by a boundary.

A different type of variation obtains in class 20. Here we find virtual unanimity in [ɛ:]. We do find **SE** using [æ] in **passage** and **cashier** and **SSI** using [æ] in **passenger**, but this might possibly be due to the relative unclarity of the syntactic boundaries in these items, rather than to inherent variability in the class. The situation will be elucidated when more speakers have been discussed.

We find in class 24 that **Abby** and **Lassie** are pronounced by all three informants with [æ], despite the seemingly relevant syntactic boundary (cf. **cabbage** with [ɛ:] above); **math** is unanimously [ɛ:]. **Brad** and **Vad** show differences among informants. We clearly shall require a good deal more analysis before we can generalize about this class (or set of classes).

**Class 25**, comprising the single lexical item **forbade**, is variable: **SSI** uses [ɛ:]; **SE**, [ɛ]; and **JK** pronounces it to rhyme with **made**. The item apparently belongs in the exceptions class, paralleling **wrath**.
To summarize, in our Brooklyn sample we found general agreement with the predictions issuing from Rule 2. But the following discrepancies and new categories arose:

a. variability before [z] followed by a boundary (as also in Lower East Side data);
b. variability before [a] followed by a vowel (as in Lower East Side data);
c. variability before final [v];
d. variability in wagon, dagger, badger;
e. variability before [n] followed by a glide;
f. irrelevance of boundary in dazzle, imagine, Abby, Lassie;
g. variability of relevance in "unclear" boundary cases;
h. class of nicknames, shortenings, and invented items;
i. class of exceptions, including family, avenue, wrath, forbade.

For ease of reference, a revised table of environmental classes will be given:
<table>
<thead>
<tr>
<th>Reference #</th>
<th>Description</th>
<th>Examples in word list, rhymes, and minimal pairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>Voiceless stops</td>
<td>cap, catch, black, chapter, rapid, matter, hatchet, manufacture, latter, collapse</td>
</tr>
<tr>
<td>Class 2</td>
<td>[l]</td>
<td>pal, talcum, salve</td>
</tr>
<tr>
<td>Class 3</td>
<td>[ŋ]</td>
<td>bang, tank, tranquilizer, banquet</td>
</tr>
<tr>
<td>Class 4</td>
<td>Final voiced stops</td>
<td>bag, cab, grab, badge, bad, mad, pad, fad, sad</td>
</tr>
<tr>
<td>Class 5a</td>
<td>Voiced stops followed by a vowel (possible lexical exceptions)</td>
<td>badger, dagger, wagon</td>
</tr>
<tr>
<td>Class 5b</td>
<td>Voiced stops followed by a vowel (unexceptional)</td>
<td>cabinet, abbey, ladder, imagine, magic</td>
</tr>
<tr>
<td>Class 6</td>
<td>Voiced stops followed by a consonant</td>
<td>absence, abdicate, Abner, aggregate, absinthe, fabric, admonition, adz, establish</td>
</tr>
<tr>
<td>Class 7a</td>
<td>Final [z]</td>
<td>jazz, razz</td>
</tr>
<tr>
<td>Class 7b</td>
<td>Final [v]</td>
<td>salve, halve</td>
</tr>
<tr>
<td>Class 8</td>
<td>Voiced fricatives followed by a vowel</td>
<td>casually, travel, dazzle, lather, rather, tavern</td>
</tr>
<tr>
<td>Class 9</td>
<td>Voiced fricatives followed by a consonant</td>
<td>average</td>
</tr>
<tr>
<td>Class 10</td>
<td>Final voiced fricatives</td>
<td>gas, bath, half, ashcans</td>
</tr>
<tr>
<td>Reference #</td>
<td>Description</td>
<td>Examples in word list, rhymes, and minimal pairs</td>
</tr>
<tr>
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<td>-------------</td>
<td>-------------------------------------------------</td>
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<tr>
<td>Class 11a</td>
<td>[s] followed by a vowel</td>
<td>fashion, passion, rational, national, pistachio, cashew, C-rations</td>
</tr>
<tr>
<td>Class 11b</td>
<td>[f], [θ], [θ̂] followed by a vowel</td>
<td>placid, tassels, mathematics, traffic, fascinate, chassis</td>
</tr>
<tr>
<td>Class 12</td>
<td>Voiceless fricatives followed by a voiceless consonant</td>
<td>afternoon, master, grasp</td>
</tr>
<tr>
<td>Class 13</td>
<td>Voiceless fricatives followed by a voiced consonant</td>
<td>Afghan, Catholic, mathematics</td>
</tr>
<tr>
<td>Class 14</td>
<td>Final [m], [n]</td>
<td>Afghan, (tin) can, ham, man</td>
</tr>
<tr>
<td>Class 15</td>
<td>[m̊], [n̊] followed by a vowel</td>
<td>hammer, planet</td>
</tr>
<tr>
<td>Class 16</td>
<td>[m], [n] followed by a liquid or glide</td>
<td>manual, manufacture, canyon, annual</td>
</tr>
<tr>
<td>Class 17</td>
<td>[m], [n] followed by an obstructed</td>
<td>tangerine, hand, ramp, dance, aunt, hamster, Crandall</td>
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<tr>
<td>Class 18</td>
<td>Nonfinal voiced stops followed by boundary</td>
<td>padding, sadden, baggy, cabbie, adds</td>
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<tr>
<td>Class 19</td>
<td>Nonfinal voiced fricatives followed by boundary</td>
<td>paths, jazzy, raspberry</td>
</tr>
<tr>
<td>Class 20</td>
<td>Nonfinal voiceless fricatives followed by (possible) boundary</td>
<td>passage, gasoline, cashier, bashful, classics, paths, brassy, passenger, ashes, classy</td>
</tr>
</tbody>
</table>
Table 8—Continued

<table>
<thead>
<tr>
<th>Reference #</th>
<th>Description</th>
<th>Examples in word list, rhymes, and minimal pairs</th>
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<td>Nonfinal [m], [n] followed by boundary</td>
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<td>Class 22</td>
<td>Boundary</td>
<td>yeah, can't, shan't</td>
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<tr>
<td>Class 23</td>
<td>&quot;Weak words&quot;</td>
<td>had, and, than, am, has, can 'be able', as, have</td>
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<tr>
<td>Class 24</td>
<td>Hypocoristic forms, shortenings, and invented items</td>
<td>Abby, Lassie, Brad, math., &quot;Vad&quot;</td>
</tr>
<tr>
<td>Class 25</td>
<td>&quot;Exceptions&quot;</td>
<td>forbade, wrath, avenue, family</td>
</tr>
</tbody>
</table>

4.3.2. Queens

As with Brooklyn, we have three speakers representing the Borough of Queens -- BW, SSo, and GH. The first two show a short-a profile that is relatively consistent with Rule 2 and the data we have observed for Brooklyn. But GH's behavior is anomalous; she will be discussed separately.

BW, in fact, conforms almost completely to the predictions of Rule 2; his only departures during the interview are the (by now expected) [ɛ:] in family, avenue, and [æ] in the second syllable of Afghan and in cad (an importation from formal style?).
SSc's data are a bit incomplete, but we have ample for determining the major outlines. He shows perfect conformity in all classes except 5a and 20: he uses [ɛ:] in badger, wagon, but [æ] in dagger; and he uses [æ] in gasoline, cashier, classics, classy, brassy, but [ɛ:] in passage, bashful, passenger, and ashcans. He shows "normal" forms in class 25: [ɛ:] in avenue, family and [æ] in wrath; forbade rhymes with made.

GH's forms are widely divergent from any we have examined. She does show perfect agreement in classes 1 (CAP), 2 (PAL), 5b (LADDER), 6 (ABDICATE), 7a (HALVE), 8 (LATHER), 9 (AVERAGE), 11b (TRAFFIC), 15 (PLANET), 21 (ASHCANS), 22 (YEAH), and 23 (HAD). And we also find the customary variation in classes 5a (BADGER), 7a (JAZZ), 11a (NATIONAL), and 16 (MANUAL) (within and across items). In class 19 (PATHS), we find jazzy and raspberry with [æ] (paths ends in [ə] for GH and is therefore, out of the class); this vowel is probably to be expected since she uses [æ] far more frequently than [ɛ:] in the analogous class 7a (JAZZ). But she also exhibits tremendous variation in many other word classes: thus she pronounces bag (class 4), bath (class 10), afternoon and fantastic (class 12), Afghan (class 14), cabbie (class 18), and passage, gasoline, bashful, classics, and passenger (class 20) all with [æ]; and she pronounces tangerine, hand, and ramp (class 17) and can't (class 22) sometimes with [æ] and sometimes with [ɛ:]. In class 24, only math. has [ɛ:], though Brad has an
indeterminate vowel -- presumably a very slightly raised [æ].
In class 25, wrath and avenue have [æ] and family shows variation; (forbade rhymes with made).

What is even more surprising than the very large number of unexpected [æ]-forms used by GH is her pronunciation of tranquilizer and vanquish (class 3) and math'matics (class 13) with [ɛ:]. Apart from these, we would have clearcut and motivated recourse to an explanation of social correction (or dialect mixture), since the unpredicted forms are just those that are of higher social prestige and are in the direction opposite to that which is presumed diachronically. Tranquilizer, vanquish, and math'matics could cause us to reject the otherwise convincing social-correction hypothesis; however, we will attempt to show in our discussion of other speakers from metropolitan New York City that there is a trend (which GH exemplifies) for class 3 (BANG) to be pronounced with [ɛ:] -- thus generalizing the behavior of short-a before nasals -- and that our characterization of short-a pronunciation in Rule 2 before certain obstructive clusters (class 13 included) requires modification. If we are successful our appeal to social correction here would tend to be justified.

4.3.3. The Bronx

Representing the Bronx in our sample are five speakers -- SGC, LS, NW, SJ, and JBa. The first two exhibit short-a patterns of the sort we have come to expect; the next two
are somewhat more divergent; and the fifth presents us with some very discrepant forms.

From SGC, only the following facts are of note: class 7a (JAZZ) and jazzy, raspberry of class 19 have [æ], as has class 5a (BADGER); class 11a (NATIONAL) shows the usual variation, along with classes 16 (MANUAL), 18 (BAGGY), and 20 (BRASSY); Afghan (class 14) has [æ]; and, something we have heretofore not seen, fad (class 4) can have either [æ] or [ɛ:], perhaps under the influence of its membership in the more formal portion of the lexicon.

LS shows the familiar variation in classes 5a (BADGER), 7a (JAZZ), 11a (NATIONAL), 18 (BAGGY), and 20 (BRASSY). Like SGC, he also has [æ] for Afghan. Exceptionally, he has [æ] in afternoon (as did GH) and in family (pronounced tri-syllabically).

NW has [ɛ:] throughout classes 7a (JAZZ) and 19 (PATHS). He exhibits variation in classes 16 (MANUAL), 18 (BAGGY), and 20 (BRASSY), but uses [æ] in class 5a (BADGER). He uses [æ] in avenue and in afternoon (is the latter more than coincidence?), and he pronounces casually (class 8) with a completely inexplicable [ɛ:].

SJ, like NW, has [ɛ:] in classes 7a (JAZZ) and 19 (PATHS), and varies in classes 16 (MANUAL), 18 (BAGGY), and 20 (BRASSY); she, however, also varies in class 5a (BADGER). In class 25, she uses [æ] in avenue (like NW) and [ɛ:] in wrath; that is to say, they are not exceptions to Rule 2, contrary to our expectations. Though she has [ɛ:] in after,
she pronounces afternoon with [ə] (It would appear that we have to accept the latter as another possible exception in New York City — at least, in the Bronx.) Reminiscent of SGC, we find that she has [ə] in fad. Surprisingly, SJ shows variation in am, although the remainder of class 23 is solidly [æ]. Furthermore, she has [ɛ:] in dazzle. Whether this datum is explainable by assuming a relevant boundary for SJ in the item is a question we cannot answer with the limited information we have thus far examined.

JBa's short-ə pattern is very different from that of the other speakers we have looked at. For one thing, he exhibits a feature highly uncharacteristic of New York City speakers: the pronunciation of catch (class 1) and am, can 'be able', than (class 23) at least part of the time with the short e of bed, men, etc. (These items, of course, do not require a rule difference, since we must merely place them in a different lexical class; but they do serve as an indication that we are probably dealing with a highly divergent dialect.) We find, for class 3, [æ] as expected in bang, but [ɛ:] in gang, tank; for class 5b, the expected [æ] everywhere except in magic, which has [ɛ:]; for class 7b, [ɛ:] in halve, but [æ] in salve; for class 8, [æ] everywhere except in casually, which is pronounced with [ɛ:]; for class 11b, [æ] everywhere but in fascinate; in class 13, Afghan and Catholic have [æ], but mathematics has [ɛ:]; and in class 23, as and have are pronounced with the customary [æ], but am varies between [ɛ:] and [ɛ], has varies between [ɛ:] and [æ],
and has [ɛ:]. These are all examples of unusual variation, but we also find near or total unanimity in other classes, in an unexpected direction. In class 11a, all items have [ɛ:], except national, which varies between [ɛ:] and ə; and in class 16 (MANUAL) all items have [ɛ:].

4.3.4. Manhattan

Besides the present author, whose dialect has already been discussed (cf. Section 4.1), there are six speakers in our sample from Manhattan -- TC, KC, DO, RC, PB, and JB. The last five of these form part of the nuclei of a pair of interrelated, though age-graded, preadolescent and teenage peer groups. (KC, RC, and PB are teenagers; DO and PB are, respectively, the younger brothers of KC and PB.) TC has no connection with the other five and will be discussed first.

TC exhibits very strong evidence of social correction, since in no case do we find [ɛ:] in lexical classes where we have come to expect ə, while we find many instances of ə for [ɛ:], especially in reading and minimal-pair styles. Indeed, during the interview TC mentions that he has been doing his best to eliminate many features of his speech which might identify him as a New Yorker and which he finds distasteful. For example, in formal styles family, half, hand, avenue all were pronounced with ə; in more informal speech they showed [ɛ:], and this includes eight separate utterances of family! Thus, despite some apparent anomalies in short-a pronunciation, we have good reason to believe that TC is very
similar to the majority of our speakers in his more casual
(i.e., more basic and natural) speech.

We find for the other five Manhattanites a surprising
amount of variation. We present in Table 9 a summary of all
forms in the word list which show cross-dialectal differences
among these speakers; also included are the other, unvarying
members of certain word classes which show an especially
large amount of variation.
<table>
<thead>
<tr>
<th>Word Class</th>
<th>Word</th>
<th>Vowel Predicted by Rule 2</th>
<th>Vowel Expected from Examination of Previous Speakers</th>
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<th>DO</th>
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<th>JB</th>
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</table>
| 11a        | C-ration | [əː] or [ɛː] or [ɛː] | [ɛː] [ɛː] [ɛː] | ~ | -- | [ɛː]
<p>| 11b        | mathematics | [əː] | [əː] [əː] [ɛː] | [əː] [əː] [əː] |
| 11b        | traffic | [əː] | [əː] [ɛː] | [əː] [əː] [əː] |
| 12         | afternoon | [ɛː] or [ɛː] | [ɛː] [ɛː] [ɛː] | [ɛː] [ɛː] [ɛː] |
| 12         | master | [ɛː] | [ɛː] | -- | [əː] [əː] [ɛː] [ɛː] |
| 15         | hammer | [əː] | [əː] [əː] [ɛː] | [əː] [əː] [əː] |
| 15         | planet | [əː] | [əː] | -- | -- | [ɛː] [əː] [əː] |
| 16         | manual | [əː] or [ɛː] | [əː] [əː] [əː] | [əː] [əː] [əː] |
| 16         | manufacture | [əː] | [ɛː] [ɛː] [ɛː] | [ɛː] [ɛː] [ɛː] |
| 16         | canyon | [əː] | [əː] [ɛː] | [əː] | -- | [əː] |
| 16         | annual | [əː] | [əː] [əː] | [əː] [əː] [əː] |
| 17         | tangerine | [ɛː] | [ɛː] [ɛː] [ɛː] | [ɛː] [ɛː] [ɛː] |
| 17         | hand | [ɛː] | [ɛː] | -- | -- | [ɛː] [ɛː] |
| 18         | padding | [ɛː] | [ɛː] | [ɛː] | -- | -- | [ɛː] |
| 18         | sadden | [ɛː] or [əː] | [ɛː] [ɛː] | [ɛː] | -- |
| 18         | baggy | [ɛː] | [ɛː] | [ɛː] | [ɛː] | [ɛː] |
| 18         | cabbie | [ɛː] | [ɛː] | [ɛː] | [ɛː] | [ɛː] |
| 18         | adds | [ɛː] | [ɛː] | [əː] | [ɛː] | [ɛː] | [ɛː] | [ɛː] |</p>
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<th>Vowel Expected from examination of previous speakers</th>
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<td>[ε:]</td>
</tr>
<tr>
<td>20</td>
<td>brassly</td>
<td>[ε:] or [æ]</td>
<td>[ε:] or [æ]</td>
<td>[ε:]</td>
<td>[ε:]</td>
<td>--</td>
<td>[æ]</td>
<td>[ε:]</td>
</tr>
<tr>
<td>20</td>
<td>passenger</td>
<td>[ε:] or [æ]</td>
<td>[æ] or [æ]</td>
<td>[ε:]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[ε:]</td>
<td>[ε:]</td>
</tr>
<tr>
<td>20</td>
<td>ashcans</td>
<td>[ε:] or [æ]</td>
<td>[æ] or [æ]</td>
<td>[ε:]</td>
<td>[æ]</td>
<td>--</td>
<td>[æ]</td>
<td>[ε:]</td>
</tr>
<tr>
<td>20</td>
<td>classy</td>
<td>[ε:] or [æ]</td>
<td>[ε:] or [æ]</td>
<td>[ε:]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[ε:]</td>
<td>[æ]</td>
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<td>23</td>
<td>had</td>
<td>[æ] or [æ]</td>
<td>[æ] or [æ]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
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<td>23</td>
<td>and</td>
<td>[æ] or [æ]</td>
<td>[æ] or [æ]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>--</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
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<td>than</td>
<td>[æ] or [æ]</td>
<td>[æ] or [æ]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
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<td>[æ] or [æ]</td>
<td>[æ] or [æ]</td>
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<td>has</td>
<td>[æ] or [æ]</td>
<td>[æ] or [æ]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
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<td>Word Class</td>
<td>Word</td>
<td>Vowel Predicted by Rule 2</td>
<td>Vowel Expected from Examination of Previous Speakers</td>
<td>KO</td>
<td>DO</td>
<td>PB</td>
<td>JB</td>
<td>RC</td>
</tr>
<tr>
<td>------------</td>
<td>----------</td>
<td>---------------------------</td>
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<td>----</td>
<td>----</td>
</tr>
<tr>
<td>23</td>
<td>can</td>
<td>[æ]</td>
<td>[æ] or [ɛ:] or [ɛ]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[ɛ]</td>
<td>[æ]</td>
<td>[æ]</td>
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<td>'be able'</td>
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<td>[ɛ:]</td>
<td>[ɛ:]</td>
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<td>[æ]</td>
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<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
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<tr>
<td>23</td>
<td>have</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>~</td>
<td>[æ]</td>
<td>~</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Lassie</td>
<td>[ɛ:]</td>
<td>[æ] or [ɛ:]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>25</td>
<td>forbade</td>
<td>[ɛ:] or [æ] or [ɛ] or [ɛ:]</td>
<td></td>
<td>[æ]</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
<td>[æ]</td>
<td>[ɛ:]</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
<td></td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>25</td>
<td>wrath</td>
<td>[ɛ:]</td>
<td>[æ] or [ɛ:]</td>
<td>[æ]</td>
<td>--</td>
<td>[æ]</td>
<td>[æ]</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>25</td>
<td>avenue</td>
<td>[æ]</td>
<td>[ɛ:]</td>
<td>[æ]</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>25</td>
<td>family</td>
<td>[æ]</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
</tr>
</tbody>
</table>

Both KO and JB pronounce gasoline dissyllabically, eliding the medial [æ].
As can be easily seen from Table 9, whether one believes that a person's parents (or older siblings) or his peer group is responsible for the rules of his speech, one is hard put to explain the data from these five speakers. While we can point to the pattern of dagger, passage, Lassie to support the former view; and tank, sadden, and possibly jazz, canyon, adds, gasoline, passenger to support the latter, no clear pattern emerges along these theoretical lines. However, certain conclusions of other sorts can, it would appear, be drawn from Table 9. Thus apparently innovative differences are more likely to be found in the younger speakers, DO and JB. For example, the use of [ɛ:] in bang, tank, traffic, canyon is restricted to one or both of these two. On the other hand, differences which we are tempted to put under the rubric of social correction are to be found mostly in the older speakers, KO, PB, and RC: e.g., the [æ] found in cab, tangerine, baggy, adds, ashcans, classy, avenue. Note, especially, in this regard that KO, who diverges from "Vowel Expected from Examination of Previous Speakers" in nine different places, always has [æ] for expected [ɛ:], and never vice versa: particularly strong evidence for social correction in his case. Nevertheless, the fact that PB uses [ɛ:] in hammer, planet, to choose the most obvious example, prevents us from stating anything approximating a categorical principle in this area.

Viewing these speakers as a group, we can see that there is quite a bit of interdialectal agreement on items
which tend to vary in the general population, despite our earlier surprise over the widespread variation exhibited. Such striking examples as fashion, cashew vs. national, pistachio and manual, annual vs. manufacture are surely not chance occurrences. Finally, we may say that while we can find some evidence of change toward the simplification of Rule 2, primarily in the tendency toward the elimination of the relevance of [-back] as a qualification on the nasals and of [-WEEK] (particularly before nasals), the situation is very disorderly and shows strong evidence of the splitting of word classes on purely lexical grounds, in contradiction of the Neo-Grammrian hypothesis.

4.3.5. Staten Island (the Borough of Richmond)

The sparsely populated area of Staten Island is represented herein by one speaker -- JT.

JT presents us with a pattern which is basically similar to that of the majority of the speakers we have examined. He does, however, show evidence of social correction. We find, for example, that ashcans (class 10), tangerine (class 17), and paths (class 20) have unexpectedly, [æ]. More importantly, JT uses [æ] for the class-3 items bang, tank in reading, but in the corresponding vowel of thanks in speech uses [ɛː]; similarly the expected [ɛː] for avenue (class 25) appears in speech, as contrasted with the [æ] used in reading.

Other features of interest include variation in class 11a (NATIONAL), the use of only [æ] in class 7a (JAZZ), and,
finally, the use of [ɛ:] in average (class 9) -- a unique pronunciation in our sample.

4.4. An Overview of Short-a Pronunciation in New York City

It would appear to be fair to say that the speakers representing New York City in our sample follow the general outlines of Rule 2. Nevertheless, some of them diverge markedly from the norm; there are several lexical classes which seem to exhibit inherent variability; a few individual items must be treated as being exceptional; and there is some evidence for saying that Rule 2 is not completely fixed and that we can see some parts of it undergoing change in the direction of simplification -- though, perhaps, complicating an overall description in synchronic terms.

Let us summarize the most widespread divergencies from Rule 2.

4.4.1. [æ] For Expected [ɛ:]

We find two important cases where Rule 2 predicts [ɛ:] but [æ] commonly occurs:

a. wrath, forbade -- These are almost certainly lexical exceptions, perhaps explicable as importations from formal speech in view of their relatively archaic and religious connotations and use.

b. Class 7a: jazz, razz -- This is a word class which has shown a great deal of variability both in the primary and Lower East Side studies. No dialect-borrowing explanation is at all convincing, nor is any explanation involving articulatory or acoustic facts. One plausible
explanation might involve the fact that both items have only recently become part of the language. 38 If we accept Babbitt's statement that it was the broad-a class that was first raised and surmise that the other word classes followed soon after, it would be quite possible to maintain that the major portion of the shift had gone to completion before jazz and razz arrived. Against an argument that pattern congruity should soon have "forced" the vowel of jazz, razz to be raised and tensed we can adduce the fact that there already existed two (and only two) items with short a before final [z]: as and has. Since both of these are in the "Weak word" class, their vowel is [æ] -- a fact which might very well have established a pattern for jazz, razz with [æ]. In such an event we might expect some heterogeneity of pronunciation, ultimately leading to a rule simplification (over time) in which razz, jazz would be almost uniformly pronounced with [ɛ:]. If an examination of our New York City speakers split by age groups had shown some sort of age-grading, our hypothesis would have been strongly supported. However, no age-grading emerges on this point (see Table 10).

38 The earliest citation for razz in the Dictionary of American Slang (compiled and edited by H. Wentworth and S. B. Flexner, [New York: Thomas Y. Crowell Company, 1960]) dates from 1921; the earliest ones for jazz (in anything like its present meaning) date from the turn of the century.
<table>
<thead>
<tr>
<th>Speaker</th>
<th>Age</th>
<th>Vowel Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>JB</td>
<td>12</td>
<td>~</td>
</tr>
<tr>
<td>DO</td>
<td>12</td>
<td>~</td>
</tr>
<tr>
<td>SSc</td>
<td>13</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>JBa</td>
<td>14</td>
<td>~</td>
</tr>
<tr>
<td>PB</td>
<td>16</td>
<td>[æ]</td>
</tr>
<tr>
<td>KO</td>
<td>16</td>
<td>[æ]</td>
</tr>
<tr>
<td>RC</td>
<td>16</td>
<td>~</td>
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<tr>
<td>JT</td>
<td>18</td>
<td>[æ]</td>
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<tr>
<td>NW</td>
<td>18</td>
<td>[ɛ:]</td>
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<tr>
<td>BW</td>
<td>21</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>SE</td>
<td>23</td>
<td>~</td>
</tr>
<tr>
<td>TC</td>
<td>24</td>
<td>~</td>
</tr>
<tr>
<td>JK</td>
<td>24</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>SSi</td>
<td>25</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>GH</td>
<td>25</td>
<td>~</td>
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<tr>
<td>LS</td>
<td>25</td>
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<tr>
<td>SJ</td>
<td>27</td>
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<tr>
<td>SGC</td>
<td>27</td>
<td>[æ]</td>
</tr>
<tr>
<td>FC</td>
<td>27</td>
<td>[æ]</td>
</tr>
</tbody>
</table>

There is, nevertheless, something of a trend towards a geographical isogloss, as can be seen in Map 2, with uniform [æ]-pronunciations confined to Manhattan, the Bronx, and Staten Island. Whether there is a tendency to generalize to [ɛ:] throughout the city can only be answered with data from the next generation or two, or at least with a much wider age range than has been used in this study.
MAP 2. VOWEL OF JAZZ, RAZZ, FOR NEW YORK CITY SPEAKERS IN THE PRIMARY STUDY.
(\*\*\* = VARIATION BETWEEN [æ] AND [æ:])

SCALE OF MILES

6 12 18
4.4.2. [ɛ:] For Expected [æ]

There are six major situations where Rule 2 predicts [æ] but [ɛ:] often occurs. In the traditional sense these would probably be called "a generalization of the raising and tensing rule." In the context of generative phonology, however, they do not lead to generalization, since they complicate rather than simplify our rules. The position taken here is that they are characteristic of the state of an ongoing sound change which is on its way toward simplification, but which creates complications and anomalies along the way.

a. avenue -- This one item is, like wrath and forbade, doubtless a lexical exception, since parallel items in its class show no tendency whatever toward raising. The only explanation -- and a weak one at that -- for avenue's behavior lies in its relatively frequent occurrence and the early age at which it is learned.

b. family, manual, manufacture, canyon, annual -- In this class we are apparently seeing the beginnings of real change in Rule 2, with family (whether because of its slight difference in conditioning environment or because of its frequency and early learning) leading the way. In any event, the relevant environment in Rule 2 appears to be changing from
c. **bang, tank, etc.** -- We are here witnessing a generalization in Rule 2 in both the traditional and generative-phonology senses. The pertinent environment in Rule 2 is apparently being simplified from

\[
\begin{align*}
[+\text{nas}] & \quad \{[-\text{seg}]\} \\
[-\text{back}] & \quad \{[-\text{snr}]\}
\end{align*}
\]

\[
\begin{align*}
[+\text{nas}] & \quad \{[-\text{seg}]\} \\
[-\text{back}] & \quad \{
\begin{align*}
[+\text{cons}] \\
[-\text{vcl}] \\
[-\text{cons}]
\end{align*}
\}
\end{align*}
\]

We shall see even more evidence of this shift when we look at our New Jersey speakers.

d. **badger, dagger, wagon** -- With these items we are apparently dealing with a rather rare type of lexical exception, since it seems that they must be treated as having an ideologically-chosen vowel, rather than as being rule-governed or lexically-marked across the majority of the population. The situation is reminiscent

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This remarkably cumbersome way of indicating nonvowels (i.e., in traditional terms, "consonants") is forced on us by the formulation of distinctive-feature representation in generative phonology.
of other idiolectal choices like that of the stressed vowel of either, neither ([Ii] vs. [aI]). It may be that we have here an artifact of a synchronic descrip-
tion of a continuing sound change -- i.e., these items could be in the forefront of a major shift from [æ] to [ɛ:] before [g] and [j] followed by a vowel -- but that, again, is something that can only be answered with data from future generations, or, perhaps, by expanding the age ranges dealt with.

e. fashion, passion, rational, etc. -- In this class we find still another variety of exceptionality: inherent variability within and across dialects. This situation seems to be relatively stable throughout the New York City population, as is evidenced by the fact that it even emerges in the older speakers in our Lower East Side sample. No explanation at all convincing in this case has been uncovered.

f. "Weak words" (had, can 'be able', etc.) -- We notice here another sort of trend. It appears that there is a tendency for the class to split into two different envi-
ronments, where the important characteristic is whether or not a nasal follows the short æ; almost every case of [ɛ:] in a weak word has a nasal in that position. We take this to suggest the removal of still another re-
striction on Rule 2 -- i.e., movement toward simplifica-
tion. But the shift, viewed synchronically, induces a
tremendous amount of complication if we try to include it within Rule 2, even if we disregard the variation present across the population. (It seems to require that we split the [+nas] environment away from the rest of the rule while we repeat all but [-WEAK] in the left-hand member.) This "solution" and its theoretical inadequacies will be reexamined in the light of data from New Jersey, especially in Sections 4.5.15, 5.9, and 5.10.

4.5. New Jersey

Sections 4.5.1 - 4.5.8 deal with speakers from towns between the Hackensack and Hudson Rivers in eastern New Jersey. Sections 4.5.9 - 4.5.12 summarize speakers from towns between the Passaic and Hackensack Rivers (i.e., farther west). Sections 4.5.13 - 4.5.14 comprise descriptions of speakers from towns which are west of the Passaic River.

At the beginning of each section for our New Jersey speakers, we have located their residence relative to a place already mentioned. However, in this area of New Jersey, mere distance in miles is by no means the most important impediment to communication, although it is obviously germane. What is apparently most significant is the physical geography of the region; in particular, position with respect to the ridges of the Palisades, the marshlands which separate them, and the rivers, creeks, etc., which go through the area
is the largest barrier between towns. In this section, we will outline the pertinent geographical features.

Beginning at the Hudson River and proceeding westward, the following facts appear relevant for the locations represented in our sample:

1. Fort Lee and West New York on the Hudson River and the eastern portion of the first ridge of the Palisades, form a geographical group with Leonia, Ridgefield, and North Bergen, on the western slope of that ridge.

2. Dumont, north of Leonia, has no very important physical features separating it from Leonia and Ridgefield Park; but Overpeck Creek, which despite its name has more the dimensions of a river, comes directly between Leonia and Ridgefield (on its east) and Ridgefield Park (on its west). Near Ridgefield Park the next ridge of the Palisades emerges from the marshlands and meadows.

3. To the south, Secaucus stands in marshland, isolated from other towns in the area. On its east and south lie a network of creeks (Paunpeck Creek, Miller Creek, Cromskill Creek, and Penhorn Creek); on its west and north is the Hackensack River.

4. Hackensack, East Rutherford, and Rutherford form the next grouping. Curiously, one can view Hackensack and East Rutherford as comprising a subgrouping almost as naturally as East Rutherford and Rutherford. Of the three towns, only East Rutherford is on a significant amount of
marshland, but a major railroad line and Berrys Creek separate East Rutherford and Rutherford.

5. North of this grouping is the community of Saddle River. It is relatively isolated, being separated from towns to the south and east by the Saddle River and to the west by the Passaic River. The town is partially on the next Palisades ridge.

6. West of the town of Saddle River lie the last two localities in our New Jersey sample: Passaic and Paterson. They are to the west of the Passaic River and on the next major ridge of the Palisades. Both communities are somewhat isolated by the conformation of the Palisades in the area.

7. The New Jersey communities in the sample are located in three different counties:
   a. Bergen County - Fort Lee, Leonia, Ridgefield, Ridgefield Park, Dumont, Hackensack, East Rutherford, Rutherford, and Saddle River;
   b. Hudson County - West New York, North Bergen, and Secaucus;
   c. Passaic County - Passaic and Paterson.

4.5.1. Fort Lee

Fort Lee, a town just over the George Washington Bridge from northern Manhattan, is represented by JC. He adheres, for the most part, to the major patterns that were evidenced by our New York City speakers, but he exhibits many of the divergencies from Rule 2 that appeared only sporadically in
their speech. Thus he uses \[\varepsilon:\] throughout class 16 (manual, manufacture, etc.), in all the weak words having a nasal, and before \[\eta]\) (class 3). In addition, although we find \[\varepsilon]\) in hammer, planet (class 15), he uses \[\varepsilon:\] in the perfectly analogous hammock. The tendency appears to be quite clear: we are, it would seem, witnessing at least the beginnings of the splitting up of Rule 2, with the presence of the feature \[+\text{nas}\]\ being sufficient to cause the raising and tensing of an immediately preceding short \[\partial\), regardless of what follows the nasal segment.

JC shows one other trait that was quite rare in New York City: the use of \[\varepsilon:\] in dazzle.

He also shows the familiar variation in class 11a (NATIONAL) (with a predominance of \[\varepsilon:\]), but uses only \[\partial\) in class 7a (JAZZ).

We can see, in addition, some evidence of social correction in that JC uses \[\partial\) when reading avenue but \[\varepsilon:\) in both instances of the word in speech.

4.5.2. West New York

DR is our representative of West New York, New Jersey, which is near the Hudson River directly across from mid-Manhattan. Like JC (from Fort Lee), we find little that would distinguish his short-\[\partial\) pronunciation from that of a New Yorker, except before nasals. He shows variation in class 16 (MANUAL), and uses \[\varepsilon:\) in all the weak words having a nasal; but he does use only \[\partial\) in class 3 (BANG). However, we find variation in class 15 (PLANET), just as we did in the speech of JC.
We also find the accustomed variation in classes 7a (JAZZ) and 11a (NATIONAL).

4.5.3 Leonia

PE represents Leonia, a couple of miles northwest of Fort Lee. She too shows instability in her pronunciation before nasals. She uses [ɛː] in all weak words having nasals; and shows variation in classes 3 (BANG), 15 (PLANET), and 16 (MANUAL). She also has the apparently normal variation in classes 7a (JAZZ) and 11a (NATIONAL).

Additionally, we find, most unexpectedly, [æ] in half (class 10) and [ɛː] in adz (class 6) and as (class 23).

4.5.4. Ridgefield

Our speaker from Ridgefield (about four miles southwest of Fort Lee) is LV. His short-æ pronunciation is virtually indistinguishable from what we found most commonly in New York City. He uses [æ] throughout classes 3 (BANG), 15 (PLANET), and 16 (MANUAL), although he varies in weak words having nasals.

He shows variation in class 11a (NATIONAL), but uses only [æ] in class 7a (JAZZ).

4.5.5. North Bergen

We have two speakers representing North Bergen (about three miles southwest of Ridgefield): MM and HE. They have rather different short-æ patterns and will therefore be treated separately.

MM shows variation in class 3 (BANG) and in weak words
having nasals; in classes 15 (PLANET) and 16 (MANUAL), he uses [æ].

Class 11a (NATIONAL) exhibits variation, though with a large preponderance of [ɛː]; class 7a (JAZZ) has [ɛː].

Surprisingly, tassels and fascinate (class 11b) have [ɛː], despite the fact that the corresponding placid and chassis have [æ].

Afghan (class 14) and math. (class 24) show an unexpected [æ].

HE has [ɛː] in class 3 (BANG); in all weak words and in classes 15 (PLANET) and 16 (MANUAL), he uses [æ].

As in MM's speech, class 11a (NATIONAL) is variable and class 7a (JAZZ) has [ɛː]. Inexplicably, cab (class 4), hamster (class 17), and bashful (class 20) have [æ].

4.5.6. Secaucus

Secaucus, which is about three miles west of West New York, is represented by two very different speakers: JD and BB.

JD exhibits variation in class 3 (BANG), but uses only [ɛː] in weak words having nasals. Classes 15 (PLANET) and 16 (MANUAL) have only [æ].

Both classes 7a (JAZZ) and 11a (NATIONAL) are variable.

We also find two areas of close agreement between JD's speech and that of MM from North Bergen. First, we have variation in class 11b: this time chassis and fascinate have [ɛː], while tassels has [æ]; (placid was pronounced
with [ɛI] in the first syllable). Secondly, Afghan and math have [æ] for JD.

There is some evidence for social correction in JD's speech, since he uses [æ] in avenue in reading style, but [ɛ:] in both instances of the word in normal talking.

BB's speech is variable in classes 3 (BANG) and 15 (PLANET) and in weak words having nasals; class 16 (MANUAL) has only [æ]. He has variation in classes 7a (JAZZ) and 11a (NATIONAL). In class 11b, only traffic and fascinate have [æ]. Placid, tassels, chassis, and, most surprisingly, mathematics have [ɛ:].

Like JC (from Fort Lee), BB uses [ɛ:] in dazzle.

4.5.7. Ridgefield Park

JM is our speaker from Ridgefield Park, about four miles west of Fort Lee but separated from it by Overpeck Creek. He is variable in classes 3 (BANG) and 16 (MANUAL), has [æ] in class 15 (PLANET), and uses [ɛ:] in weak words having nasals.

Class 7a (JAZZ) has [ɛ:], but 11a (NATIONAL) is variable.

As it was for JD of Secaucus, in class 11b chassis and fascinate have [ɛ:] while the rest of the class all have [æ].

Also as for JD, avenue has [æ] in reading style and [ɛ:] in speech.

JM does present us with a few surprises, however: class 7b (HALVE) has [æ]; badge (class 4) also has [æ]; while Afghan (class 13) has [ɛ:]. As, has (Weak words --
class 23) are variable, perhaps indicative of a trend toward a split in the effects of word-final continuants regardless of [+WEAK]; i.e., final [z] causes raising, but final [v] (cf. have with [æ]) does not.

4.5.8. Dumont

It was not our original intention to include a representative of Dumont in our sample, since it is about eight miles farther north than any of the other places we are dealing with. (It is directly north of Leonia.) Jow, who is being treated as its representative, is a friend of the author's who was raised in the Bronx and was interviewed originally as a Bronx speaker. After phonetic analysis of his interview tape, however, the author was surprised to find several features of Jow's short-æ pronunciation which appeared to be foreign to New York City. It was learned from Jow that he had moved to the Bronx at the age of five from Dumont, New Jersey, and he has thus been listed as a speaker from that town, though with some hesitancy. His younger brother, NW, took Jow's place in the group of Bronx speakers.

What stood out immediately was Jow's use of [ε:] in class 3 (BANG) and class 11a (NATIONAL), apparently without exception. He also uses [ε:] in class 7a (JAZZ), and like many of our New Jersey speakers, in fascinate (class 11b); his use of [æ] in avenue is of course unusual in New York City (although his brother exhibits this trait also).
He shows variation in class 16 (MANUAL), but uses only [æ] in class 15 (PLANET). The weak-word class shows only [æ] -- probably a New York City trait.

Very likely, JoW is a true example of "dialect mixture." His case is most interesting, since it indicates that even at so early an age as five, some of the most intricate and largely non-distinctive phonetic features have already been fixed.

4.5.9. Saddle River

Saddle River, about five miles northwest of Ridgefield

Park across the Hackensack River, is ostensibly represented by two speakers: EX and his older brother, SX. In fact, however, there is essentially only one interview. It became apparent to the author after EX had read the first twenty words or so of the word list that EX was such a poor reader that a substitution would have to be made. His brother was the only member of the group of four boys there who would consent to read. His general hostility and suspicion, however, remained apparent throughout the interview.

Nevertheless, EX gave enough speech during the interview so that, when combined with his reading, we can get a fairly good idea of his general short-a patterns. Table 11 gives an exhaustive description of that data.
<table>
<thead>
<tr>
<th>Class</th>
<th>Item</th>
<th>Style</th>
<th>Vowel Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>black</td>
<td>Reading</td>
<td>[æ]</td>
</tr>
<tr>
<td>1</td>
<td>chapter</td>
<td>Reading</td>
<td>[æ]</td>
</tr>
<tr>
<td>1</td>
<td>collapse</td>
<td>Reading</td>
<td>[æ]</td>
</tr>
<tr>
<td>1</td>
<td>that</td>
<td>Speaking</td>
<td>[æ]</td>
</tr>
<tr>
<td>1</td>
<td>tackle(ð)</td>
<td>Speaking</td>
<td>[æ]</td>
</tr>
<tr>
<td>2</td>
<td>pal</td>
<td>Reading</td>
<td>[æ]</td>
</tr>
<tr>
<td>2</td>
<td>talcum</td>
<td>Reading</td>
<td>[æ]</td>
</tr>
<tr>
<td>2</td>
<td>Italian</td>
<td>Speaking</td>
<td>[æ]</td>
</tr>
<tr>
<td>3</td>
<td>bang</td>
<td>Reading</td>
<td>[æ]</td>
</tr>
<tr>
<td>3</td>
<td>language</td>
<td>Speaking</td>
<td>[æ]</td>
</tr>
<tr>
<td>5b</td>
<td>Saddle Brook</td>
<td>Speaking</td>
<td>[æ]</td>
</tr>
<tr>
<td>7a</td>
<td>jazz</td>
<td>Reading</td>
<td>[æ]</td>
</tr>
<tr>
<td>8</td>
<td>savage</td>
<td>Speaking</td>
<td>[æ]</td>
</tr>
<tr>
<td>11a</td>
<td>fashion</td>
<td>Reading</td>
<td>[æ]</td>
</tr>
<tr>
<td>11a</td>
<td>passion</td>
<td>Reading</td>
<td>[æ]</td>
</tr>
<tr>
<td>12</td>
<td>afternoon</td>
<td>Reading</td>
<td>[æ]</td>
</tr>
<tr>
<td>12</td>
<td>after</td>
<td>Speaking</td>
<td>[æ]</td>
</tr>
<tr>
<td>15</td>
<td>grammar</td>
<td>Speaking</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>16</td>
<td>cam'ra</td>
<td>Speaking</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>17</td>
<td>sandwich</td>
<td>Speaking</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>17</td>
<td>candid</td>
<td>Speaking</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>17</td>
<td>answer</td>
<td>Speaking</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>18</td>
<td>padding</td>
<td>Reading</td>
<td>[æ]</td>
</tr>
<tr>
<td>22</td>
<td>yeah</td>
<td>Speaking</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>23</td>
<td>had</td>
<td>Reading</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>23</td>
<td>am</td>
<td>Reading</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>23</td>
<td>and</td>
<td>Reading</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>23</td>
<td>and</td>
<td>Speaking</td>
<td>[æ]</td>
</tr>
<tr>
<td>23</td>
<td>have</td>
<td>Speaking</td>
<td>[æ]</td>
</tr>
<tr>
<td>25</td>
<td>fam'ly</td>
<td>Reading</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>25</td>
<td>avenue</td>
<td>Speaking</td>
<td>[ɛ:]</td>
</tr>
</tbody>
</table>
Even from the very limited data available to us, we can see that EX is rather different from any of the speakers previously examined.

Thus, although we find [æ] in class 3 (BANG), we find [ɛ:] in classes 15 (PLANET) and 16 (MANUAL), and variation throughout class 23 (HAD). (Is it more than coincidence that the [æ]-forms in class 23 are from speaking style and the [ɛ:] -forms from reading style?) Also, the use of [æ] in class 12 (MASTER) is quite striking.

SX shows many similarities to his brother. He has [ɛ:] in class 16 (MANUAL) and [æ] throughout classes 10 (HALF) and 12 (MASTER). He also uses only [æ] in classes 7a (JAZZ) and 11a (NATIONAL). But there are some differences, too.

We find, for SX, only [ɛ:] in class 3 (BANG). He varies in class 15 (PLANET), and uses [ɛ:] in weak words having nasals and [æ] in other weak words. SX uses [æ] in avenue and in class 7b (HALVE). He also shows a striking split (or variation?) in class 4 (CAB), with the uniform use of [æ] before final [d] but [ɛ:] elsewhere in the class.

4.5.10. Hackensack

LW represents Hackensack, New Jersey, located about three miles southeast of Saddle River. His short-a pattern is quite similar to the ones we are used to seeing.

He varies in class 3 (BANG) and in weak words having nasals. He uses [æ] in class 15 (PLANET), but [ɛ:] in class 16 (MANUAL). LW exhibits the familiar variation in class 11a (NATIONAL), but uses only [æ] in class 7a (JAZZ). In class
llb, placid and fascinate have [ɛː]; all the others have [ɛ].

The only surprise we find is his use of [ɛː] in catch (class 1).

4.5.11. East Rutherford

East Rutherford, about two miles southeast of Hackensack, is represented by two rather fragmentary interviews. The speakers, PV and CP, are high-school classmates and friends, but their short-a patterns are very dissimilar.

PV shows us nothing very unusual. Data for class 3 (BANG) are absent, but he uses [æ] in class 15 (PLANET) and [ɛː] in class 16 (MANUAL). He varies between [ɛː] and [ɛ] in weak words having nasals. He uses [ɛː] in class 11a (NATIONAL) and varies in class 7a (JAZZ).

CP varies in classes 3 (BANG) and 16 (MANUAL). He uses [æ] in class 15 (PLANET) and shows [ɛː] ~ [æ] ~ [ɛ] in weak words having nasals. He uses [æ] in class 7a (JAZZ) and varies in class 11a (NATIONAL), but with a large preponderance of [æ]. CP's unusual traits are the tremendous amount of variation he exhibits in classes 4 (CAB), 10 (HALF), 12 (MASTER), and 17 (DANCE), and his use of [æ] throughout class 18 (BAGGY). Whether these data are the results of social correction or of a basically different set of short-a rules would seem to be an open question, but data from neighboring areas will, as we shall see, indicate the latter choice to be the correct one.

4.5.12. Rutherford

Rutherford, bordering on East Rutherford, is represented
by two interviews, one complete (that of PT) and one incom-
plete (that of MP).

MP, like PV of East Rutherford, shows us little new. He uses [ɛ:] in class 3 (BANG) and in class 16 (MANUAL). Class 15 (PLANET) shows [æ] and weak words having nasals vary among [æ], [ɛ:], and [ɛ]. MP uses [ɛ:] in class 7a (JAZZ) and varies in class 11a (NATIONAL).

PT, on the other hand, reminds us very much of CP of East Rutherford. He uses [ɛ:] in class 3 (BANG), but [æ] in class 16 (MANUAL). In class 15 (PLANET) and in weak words having nasals, he is variable. He shows [æ] in classes 7a (JAZZ) and 11a (NATIONAL). MP uses [æ] in catch (class 1) in reading style, but [ɛ] in normal speech. In classes 4 (CAB) and 10 (HALF), he is variable, but he uses only [æ] in classes 12 (MASTER) and 18 (BAGGY).

We should, at this time, explore the unexpected similar-
ties uncovered between PT and CP. An exhaustive list of items elicited in classes 4 (CAB), 10 (HALF), 12 (MASTER), 17 (DANCE), and 18 (BAGGY) follows in Table 12.
### TABLE 12
CP (EAST RUTHERFORD) and PT (RUTHERFORD):
CLASSES 4, 10, 12, 17, 18

<table>
<thead>
<tr>
<th>Class</th>
<th>Item</th>
<th>CP-Vowel</th>
<th>PT-Vowel</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>bag</td>
<td>[æ]</td>
<td>[æ] ~ [ɛ:]</td>
</tr>
<tr>
<td>4</td>
<td>cab</td>
<td>[æ] ~ [ɛ:]</td>
<td>[æ]</td>
</tr>
<tr>
<td>4</td>
<td>grab</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>4</td>
<td>badge</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>4</td>
<td>bad</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>4</td>
<td>mad</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>4</td>
<td>pad</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>4</td>
<td>sad</td>
<td>[ɛ:]</td>
<td>[æ]</td>
</tr>
<tr>
<td>4</td>
<td>cad</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>10</td>
<td>gas</td>
<td>--</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>10</td>
<td>bath</td>
<td>--</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>10</td>
<td>half</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>10</td>
<td>ashcans</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>12</td>
<td>afternoon</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>12</td>
<td>master</td>
<td>[ɛ:]</td>
<td>[æ]</td>
</tr>
<tr>
<td>12</td>
<td>grasp</td>
<td>[æ]'</td>
<td>[æ]</td>
</tr>
<tr>
<td>12</td>
<td>past</td>
<td>[ɛ:]</td>
<td>--</td>
</tr>
<tr>
<td>12</td>
<td>basketball</td>
<td>[ɛ:]</td>
<td>--</td>
</tr>
<tr>
<td>17</td>
<td>tangerine</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>17</td>
<td>hand</td>
<td>[æ]</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>17</td>
<td>ramp</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>17</td>
<td>dance</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>17</td>
<td>aunt</td>
<td>--</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>17</td>
<td>hamster</td>
<td>[ɛ:]</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>17</td>
<td>Crandall</td>
<td>[ɛ:]</td>
<td>--</td>
</tr>
<tr>
<td>17</td>
<td>grandmother</td>
<td>--</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>17</td>
<td>handball</td>
<td>--</td>
<td>[ɛ:]</td>
</tr>
<tr>
<td>Class</td>
<td>Item</td>
<td>CP-Vowel</td>
<td>PT-Vowel</td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>18</td>
<td>padding</td>
<td>[æ]</td>
<td>--</td>
</tr>
<tr>
<td>16</td>
<td>sadden</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>18</td>
<td>baggy</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>18</td>
<td>cabbie</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
<tr>
<td>18</td>
<td>adds</td>
<td>[æ]</td>
<td>[æ]</td>
</tr>
</tbody>
</table>

It is clear, even from casual inspection, that the patterns of CP and PT in these word classes match quite closely. Since Rule 2 predicts only [æ:] in these environments, and we have a majority of [æ], it must surely be the case that another version of the rule applies for these two speakers. (Class 17 apparently does not belong in this grouping; CP's use of [æ] in hand, if at all explicable, would seem to be a result of social correction.) Analysis of this dialect is taken up in Section 4.5.15b, and a rule is tentatively posited there.

4.5.13. Passaic

Passaic, about three miles northwest of Rutherford across the Passaic River, is represented by three speakers: LB, BS, and JnW. (JnW's interview is relatively incomplete.) It is clear from these interviews that Passaic, New Jersey begins a completely new dialect area with respect to short-a pronunciation. We find several very different characteristics,
along with some traits which we have seen to a lesser extent in other New Jersey speakers, though not at all in our New York City interviewees.

The most striking thing about all three speakers is their use, to varying extents of [ɛ:] in class 1 (CAP); this class for all other speakers we have looked at, has been solidly [æ]. Thus LB uses only [ɛ:] in catch and that, varies between [æ] and [ɛ:] in back and bat, and uses [æ] in other words of the class; BS varies in tackle and accent; Jaw uses [ɛ:] in rapid, catch, Paterson, track, smacked, and happened, and varies in matter. One other trait we have not heretofore met is exhibited to a small degree by LB, to a much greater extent by Jaw, though not at all by BS -- the use of [ɛ:] in class 6: LB uses [ɛ:] only in absence from this class, while Jaw uses [ɛ:] in Abner, absinthe, fabric, and admonition.

All three speakers show a very strong tendency to use [ə] in classes 4 (CAB) and 10 (HALF), where the definite expectation from Rule 2 is [ɛ:]. There are various other anomalies appearing in the speech of these three. They all agree in using [ə] in classes 7a (JAZZ), 7b (HALVE), and 11a (NATIONAL), for example.

In any event, it is obvious that Rule 2 is in no way descriptive of their short-a patterns, and there does not seem to be any relatively straightforward series of modifications of the rule which would serve as a representation of their pronunciation of words with short a.
4.5.14. Paterson

SA, representing Paterson (about four miles northwest of Passaic), is our last New Jersey speaker. His speech is not as close to that of Passaic as it is to the pattern of our other New Jerseyites; however, several of his friends, who can be heard in the background on the interview tape, do exhibit the novel features we found in Passaic.

SA himself uses [ɛ:] in classes 3 (BANG), 15 (PLANET), and 16 (MANUAL) and in weak words having nasals. He varies in classes 7a (JAZZ) and 11a (NATIONAL) (though with strong predominance of [æ]), and uses only [æ] in classes 7b (HALVE) and 11b (TRAFFIC). He also varies in classes 4 (CAB) and 6 (ABDICATE), for the most part using [æ]. Only [æ] appears in class 10 (HALF) and class 12 (MASTER).

He uses only [æ] in class 1 (CAP), but in the background we hear Hackensack pronounced with [ɛ:] in both relevant syllables, that('s) variably with [ɛ:] and [æ], and tackled and back with [æ].

4.5.15. Summary of New Jersey

Generally speaking, we may divide the short-a pronunciation of the part of New Jersey we have looked at into three roughly north-south strips. The easternmost of these is quite similar to New York City; the westernmost is very different from New York City; and the area in the middle, as might be expected, provides something of a transitional zone.
a. East of the Hackensack River (Fort Lee, West New York, Leonia, Ridgefield, North Bergen, Secaucus, Ridgefield Park, Dumont). -- The major differences from the predictions of Rule 2 are the use of:

1. [ε:] in class 3 (BANG).
2. [ε:] in class 15 (PLANET).
3. [ε:] in class 16 (MANUAL).
4. [ε:] in weak words having nasals.
5. [ε:] in class 11b before [a] (e.g., in fascinate).

To implement the first three of these differences in a new rule (Rule 3) results in a simplification, but the last two lead to large complications. We seem to be forced to split an environment to take care of the fifth difference, and indeed to split the rule itself in two in order to encompass the fourth.

**Rule 3a**

```
[+vcl]  
- back  → [+tense]  
  [+nas] 
  [+low]
```

That is, Rule 3a tenses short a when a nasal follows, regardless of what follows the nasal and regardless of whether the feature [-WEAK] is present.
Rule 3b

\[
\begin{align*}
[+vcl] & \quad [+tense] \\
[+low] & \quad [+vce] \\
[-back] & \quad [-snr] \\
[-WEAK] & \quad [+cont] \\
\end{align*}
\]

Rule 3b tenses short a (in non-weak words) if it is followed: by a voiced obstruent in turn followed by a boundary; or by a boundary; or by a voiceless continuant followed by either a boundary or any voiceless consonant; or by [s], regardless of what follows the [s].

It is obvious that there is no reason to order Rule 3a before 3b, but there is another problem familiar to us from a different context: it is possible, apparently to form the Rule differently, and, from the point of view of simplicity, equivalently.
Rule 3 (Alternate);

\[
\begin{align*}
\text{a - } & \quad \left[ +\text{vcl} \right] \\
& \quad \left[ -\text{back} \right] \rightarrow \left[ +\text{tense} \right] \\
& \quad \left[ +\text{low} \right] \\
& \quad \left( \left[ +\text{vce} \right] \right) \\
& \quad \left( \left[ -\text{snr} \right] \right) \\
& \quad \left( \left[ +\text{cont} \right] \right) \\
& \quad \left( \left[ -\text{seg} \right] \right) \\
& \quad \left( \left[ -\text{vce} \right] \right) \\
& \quad \left( \left[ -\text{vce} \right] \right) \\
& \quad \left( \left[ +\text{ant} \right] \right) \\
& \quad \left( \left[ +\text{cor} \right] \right) \\
& \quad \left( \left[ -\text{vce} \right] \right) \\
& \quad \left( \left[ +\text{cont} \right] \right) \\
& \quad \left( \left[ +\text{str} \right] \right)
\end{align*}
\]

\[
\begin{align*}
\text{b - } & \quad \left[ \right] \rightarrow \left[ -\text{tense} \right] \\
& \quad \left[ +\text{vcl} \right] \\
& \quad \left[ -\text{back} \right] \\
& \quad \left[ +\text{low} \right] \\
& \quad \left[ +\text{WEAK} \right]
\end{align*}
\]

However, since there is no reason to assume lowering and laxing in this dialect, we will prefer the first version.

b. Between the Hackensack and Passaic Rivers (Saddle River, Hackensack, East Rutherford, Rutherford). -- In this locality we find at least three different profiles of short-a pronunciation, owing apparently to its being an area of geographical transition.

LW (Hackensack), PV (East Rutherford), and MP (Rutherford) seem to agree relatively well with Rule 2, although
there is some tendency toward tensing before prevocalic [s], in agreement with Rule 3.

EX and SX (Saddle River) show a different pattern. They tense short a before nasals (though not before [j] for EX) and, apparently, before final [b], [j], [g], but not [d]. Thus for Saddle River we would write something like:

Rule 440

\[
\begin{array}{c}
\begin{array}{c}
[+vcl] \\
-back \ \\
[+low] \\
\end{array} \\
\{ \\
[+nas] \\
(-back) \\
\} \\
\{ \\
(+vce) \\
(-cont) \\
(-cor) \\
(+str) \\
\} \\
\} \\
\end{array}
\]

Still a different situation is manifested by CP (East Rutherford) and PT (Rutherford). Short a is tensed in their dialect before final and preconsonantal nasals, before final voiceless continuants, before final [b], and in final position. We therefore have:

---

40 Although the author has never seen a generative-phonology rule formulated which has an expression enclosed by braces within square brackets, there seems to be no theoretical objection to it. If it turns out that there is something objectionable here, the rule could be rewritten in the more customary fashion (at the expense of adding several features).
Rule 5

\[
\begin{align*}
\left[+\text{vcl}\right] & \rightarrow \left[+\text{tense}\right] \\
-\text{back} & \left\{ \begin{align*}
+\text{nas} & \left\{ \begin{align*}
-\text{vce} & \left\{ \begin{align*}
+\text{cont} & -\text{back} \\
-\text{cor} & +\text{vce} \\
-\text{cont} & \end{align*} \right\} \\
-\text{seg} & \end{align*} \right\} \\
+\text{cons} & \end{align*} \right\} \\
-\text{seg} & \end{align*} \right. \\
+\text{low} & \end{align*} \right)
\]

It should be made clear that Rules 4 and 5 are only tentative and probably approximate. In the first place, there is a considerable amount of variation which is not distinguished in the rules; secondly, and more significantly, since the dialects described are so different from those of Rules 1, 2, and 3, it is not really possible for us to know whether we have even checked out a reasonably complete list of crucial lexical items. Indeed, it is hard to imagine anyone who does not have native or near-native familiarity with the dialect writing a complete short-a rule for it, unless he had done some very extensive and intensive interviewing with speakers of the dialect.

One other comment is relevant here, though it is entirely subjective: despite the obvious dissimilarity we
see in the rules, the intuitive "feel" of the phonologies of the dialects of Rules 4 and 5 is that they are not tremendously different from those farther east.

C. West of the Passaic River (Passaic, Paterson). -- That feeling of fairly close relationship is dispelled when we come to dialects such as these, which freely admit [s:] in class 1 (CAP). The relationship between this area and those of Rules 1 through 5 can only be guessed at, with respect to short-\-a pronunciation. The difference is strikingly obvious to the ear, and no New Yorker is likely to mistake it.
V. AREAS OF BROADER INTEREST TO LINGUISTICS

5.1. Interstylistic Borrowing

In Section 2.2, the question of whether there might be some effects of social correction on the inherent structure of items was posed, with particular reference to those words which never (or, at least, very rarely) appear in casual speech. Evidence supporting the affirmative position on the question comes from the fact that we had to set up a class of exceptions (class 25) during the interview analysis. There are four items in the class, two of which, wrath and forbade, exhibit a very high percentage of pronunciation with [æ] where we would expect on phonological grounds [ɛ:]. The fact that these two words have a religious, almost archaic quality is surely relevant. Furthermore, the other two words in class 25, avenue and family, which show largely [ɛ:] rather than [æ], are among the most informal polysyllabic words in our reading list; they are thus the ones which might most easily be in the forefront of an extension of short-a tensing to a more generalized environment, and might well be imported into formal styles unchanged.

5.2. The Rebirth of the Idiolect

The group of five speakers from northern Manhattan, discussed in detail in Section 4.3.4, was included in our sample in order to ascertain, among other things, the amount of idiolectal variation tolerable within a well-defined, close-knit peer group. Now, of course, the area of phonology we are
dealing with is capable of supporting a great deal of variation, since it very rarely impinges significantly on communication at the "emic" level; nevertheless, the data clearly indicate the ability of peer-group members to have different idiolects, at least phonologically, with no apparent non-linguistic conditioning factors. This result will not be surprising to analysts who are familiar with situations involving marginal distinctions of this sort (e.g., in American English, [I] vs. [Y]). However, in the investigation of sound change and geographical variation in general, it would appear that cases of marginal differentiation should be studied much more intensively than they have been in the past.

5.3. One Phoneme or Two?

In traditional terms, the answer to the question is straightforward: we have minimal pairs, and we therefore have two phonemes. In the framework of generative phonology, however, the question is not nearly so easy to resolve. On the side of the one-phoneme view, there is the fact that all minimal pairs and most near-minimal pairs can be eliminated by resorting to acceptable lexical ([+WEAK]) and syntactic (boundary) conditioning factors, leaving only a very few exceptional items to be dealt with. Nevertheless, these exceptions lead to problems even in a generative-phonology formulation. They are of two different kinds:

1. an item, or class of items, which always exhibits the phone not predicted by a rule (say, Rule 2);
2. an item, or class of items, which sometimes exhibits the
phone not predicted by Rule 2 -- i.e., a variable item.
The first problem is familiar to students of generative pho-
nology; the solution involves marking the items as exceptions
to the rule, and counting the exceptions heavily when evalu-
ating the rule in terms of a simplicity metric. The second
problem seems not to have come up in the literature pre-
viously, in the area of phonology; though a rule itself is
often marked as optional, there seems to be no precedent for
handling a situation in which a rule is obligatory for some
items and optional for others. In syntax, the analogous
situation has been treated by placing conditions on a trans-
formational rule regarding optionality when part of the
structural description meets certain specified criteria.
It would appear that a similar treatment is required in the
case of short \( a \). Thus, for certain speakers, we would have
a condition on Rule 2 something like: "Optional / \( \_ [z] \)
\(-\text{seg}\)". Or we may have to resort to noting in the lexical
representation of an item that Rule 2 may optionally not
apply to it.

It may seem to some readers that the solution involving
one phoneme forces us to go through a great deal of compli-
cated and perhaps unconvincing sleight-of-hand, and that it
should therefore be rejected and the two-phoneme formulation
embraced. A reminder that the almost complete complemen-
tarity of \( \varepsilon \) and \( [\varepsilon:] \) would still have to be dealt with by
a rule whose effect is that of Rule 2 should be sufficient
to give pause to those with this view.

In any event, the argument in favor of allowing exceptions to rules which is given by Chomsky and Halle in Sound Pattern is certainly relevant here:

We see no reason to give up rules of great generality because they are not of even greater generality, to sacrifice generality where it can be attained. It seems hardly necessary to stress that if we are faced with a choice between a grammar $G_1$ that contains a general rule along with certain special rules governing exceptions and a grammar $G_2$ that gives up the general rule and lists everything as an exception, then we will prefer $G_1$. For this reason, citation of exceptions is in itself of very little interest. Counterexamples to a grammatical rule are of interest only if they lead to the construction of a new grammar of even greater generality or if they show some underlying principle is fallacious or misformulated.41

5.4. Marginal Phonemes and the Commutation Test

Regardless of whether we accept a one- or two-phoneme solution to the short-a problem in theoretical terms, we may view the situation, on informal pragmatic grounds at least, as one involving a marginal distinction in the phonological output. Our data allow us to form a picture of the psychological reality of such a distinction. Included in the reading section of each interview is a set of minimal pairs involving short a along with sets of minimal and near-minimal pairs of other marginal distinctions (ladder vs. latter; rider vs. writer; finger vs. singer) and other clearcut distinctions (him vs. hem; miss vs. mist), for the dialects under examination. Only one interviewee had difficulty with the commutation

41 Sound Pattern, preface, p. ix.
task for the clearcut pairs; i.e., after reading a pair aloud, he made mistakes in judging whether they were the same (or rhymed). Many people were incorrect, on the other hand, on at least one pair of the marginal-distinction items, though it was obvious that they understood the task. Typically, they decided that two items were the same (or rhymed) when, in fact, as pronounced a moment before, they were different. There was a second, and possibly more interesting, effect. People tended to reduce the distinction in these marginal pairs; that is to say, they often made two words rhyme in the minimal-pairs section that had not rhymed in the word-list section.

W. S. Moulton has suggested that we employ the communication test and informants' decisions about rhyme to a greater degree in dialect-geography interviewing;\(^4^2\) it seems to this author that these tests cannot be used effectively in just the sorts of cases where Moulton judges them most useful.

5.5. Natural Phonetic Classes, Conditioning Environments, and Possible Phonological Rules

One very important problem for a general phonological theory involves the question of what is the range of possible phonological rules, or, alternatively, what are the constraints on phonological rules. Whether we are looking at sound change, social or geographic dialects, or what is in the structuralist tradition called allophonic or conditioned

variation is irrelevant. (The data for short a have aspects of all these types.) It is intuitively clear that there are some sorts of universal constraints. Thus, for example, a rule of the form

\[ [b] \rightarrow [s] \quad [o:] \]

will obviously be rejected by any linguist a priori. There are also, of course, empirical and methodological reasons for this rejection, reasons which are deserving of examination here.

Underlying our intuitive grasp of the impossibility of certain phonological rules has been, I believe, an appeal to the use of phonological features, whether explicit or implicit. This conclusion is apparent even in the work of structuralists in the past through their appeal to phonetic similarity and environmental conditioning when grouping allophones into phonemes. A natural phonological rule has always involved a change of one or two features, even in those rules where it seems as if a great many features have changed. For instance, a sound change such as

\[ [s] \rightarrow [h] \]

(known in Greek, some dialects of Spanish, and elsewhere) may be viewed merely as a change in manner of articulation: for the purposes of this discussion, one feature.

When a sound change occurs only in certain environments, we expect those environments to show a contributing effect in some ascertainable way. Thus if we examine a rule like
rhotacism in Ancient Latin ([s] \rightarrow [r] /Vowel \_\_\_ Vowel)
we may say that the environment contributed voicing and that
there was a reduction of occlusion between the two (rela-
tively) unoccluded vowels.

There are, however, many cases where the environment's
contribution is not so easy to see. Such is the case with
our Rule 2. The environments are exceedingly complex, and
there seems to be no reason why these particular environments
out of all other similar ones should be the ones to contribute
to the tensing of short a. Nevertheless, the rule exists in
some form approximating Rule 2. What is obviously called for
is the study of Rule 2 and other such complex rules in order
to establish universal constraints in phonology, and at the
same time to ascertain the real universal dimensions and
features along which sound changes occur.

5.6. The Status of the Neo-Grammarians Hypothesis

The rule of thumb that sound changes admit of no excep-
tions has long been accepted in diachronic and comparative
linguistics. Its status has rarely been challenged, and with
good reason; it has been the principle underlying most of the
accomplishments in the field. Nevertheless, when one looks
at the products of attested sound changes, one often finds
evidence of exceptional behavior. Thus it is with the
tensing of short a. We are confronted with the split of
several word classes without a single conditioning agent to
point to. For instance, why should avenue have [ɛ:] while
average, avarice, etc., have [æ]? Why should it be that for
some speakers manual has [ɛ:] while annual has [æ]? Clearly
the word classes have split, and sound changes do admit of
exceptions. The mechanics of these splits and their propaga-
tion through the population are fertile areas for linguistic
investigation, and they can be studied through the examination
of ongoing sound changes such as the tensing of short a. To
put it another way, sound changes in progress must often
exhibit exceptional items which usually are leveled in the
long run. The forces which select certain items as the excep-
tions and the forces which tend to analogize these items must
be understood before linguistics can lay claim to an under-
standing of linguistic change.

5.7. Boundary Phenomena and the Psychological
Status of the Syntactic Boundary

During the process of interviewing, several interviewees
were asked, after having completed their reading, to split
words in the reading lists into component meaningful units
wherever they could do so. Some of the speakers chosen had
had no linguistic training; nevertheless, all who undertook
the task performed it well enough for there to be no doubt
that they had understood what had been required. Not sur-
prisingly, near-perfect agreement occurred only at what might
well be called major syntactic breaks: e.g., in compounds
and in words that could easily be separated into a stem and
a common suffix with a readily establishable meaning. Thus,
for example, paths was universally separable into path and -s
'plural'. In somewhat less transparent cases there were,
again not surprisingly, some differences of opinion: passenger and passage were not necessarily perceived to contain pass. What was most interesting in this regard was that there seemed to be no evident connection, for many of the speakers, between their recognition of the possibility of dividing a word according to meaning and their choice of a phone for short a, where, according to Rule 2, the presence or absence of a syntactic boundary should have been crucial. Thus they might use [ɛ:] in passage but [æ] in passenger, regardless of their recognition of pass as a unit of meaning in both words. The reader will recall that we employed in Rule 2 an undifferentiated [-seg] (i.e., any boundary) as part of its environment; but, apparently, that formulation was less than optimal. The obvious thought was to look for a differentiation of boundary types; to this end the author subjected both his own short-a patterns and those of a friend (BW from Queens, who showed no evidence of social correction during his interview) to close scrutiny in the further examination of words having internal morphemic breaks. The results were enlightening; they are discussed in the next section.

5.8. Boundaries and the Rules of Sound Pattern

It was immediately apparent in the speech of the author and of BW that suffixes could be divided into those which necessarily acted as part of a tensing environment and those which did not. Included in those that did were the plural, verbal, and possessive -s, the nominalizing and participializing -ing, the agentive and comparative -er, the
adjectivalizing and adverbializing -ly, the past-tense and past-participial -ed, -ish 'like, somewhat', -able, -ness, -hood, -ful, adjectival -y, and -like. Among those that did not were -ic, -ical, -ity, -ary, -id, and -ule.

Thus with [ɛ:] we have man's, grabs, laughing, masher, manly, sagged, mannish, passable, sadness, manhood, bashful, brassy, hamlike, and a host of others. With [æ] we find, for example, organic, tyrannical, opacity, granary, rabid, and granule.

It was suggestive that all the words in the second group involved stress or vowel-quality shifts from their base forms, and a comparison with Sound Pattern indicated that the suffixes in the second group required an introductory "+" boundary, whereas those of the first group had to have an introductory "#" boundary in order for the stress and tensing rules to operate correctly. In Sound Pattern, the assignment of suffixes to either group is ad hoc; the necessity of adding them to explain our data would seem to be strong corroboration for their existence and for the basic validity of both treatments.

We will thus substitute [-seg] (i.e., # or word boundary) for [-seg] in Rule 2.

Furthermore, we have some supporting, though inconclusive, evidence for Chomsky and Halle's third type of boundary, the "=". We can show that the boundary after the first syllable of such items as absence and admonition cannot be #; else the vowel of the first syllable would be [ɛ:] rather than
the attested [æ]. Our data, however, give us no reason to choose between + and = in these items.

It might seem, at this point, that another explanation is possible. We may merely be dealing with a pair of morphophonemic alternations. That is to say, it may be that in those cases where the base form has underlying [ɔ], the derived form has either [æ] or [ɛː], according to the constraints of Rule 2;43 in those cases where the base form has long a, the derived form has only [æ].44 It is difficult to evaluate the merits of this alternative because crucial items are exceedingly rare. The alternation angel:angelic -- the latter form has [ɛː] in the first syllable -- indicates, however, that the "morphophonemic solution" is inadequate, at least, in the simple formulation given above. If we reduce the scope of the explanation so that it applies only to the final syllable of the base form, the crucial cases would be those which have long a in the base forms and establish an expected raising environment for Rule 2 (as revised) in the derived forms. The only such alternating pairs with invariant short-a pronunciations that the author could find are chaste:chastity and paraphrase:paraphrastic. The evidence from these pairs is

43 We would, of course, have to assume that there is no boundary after the prefix of absence, admonition, etc.

44 This is a phenomenon that seems to be unrelated to the facts described in Section 1.6; the alternation we are dealing with here is clearly at a much deeper level.
contradictory, since chastity has [æ] and paraphrastic [ɛ:]. Therefore, we are still left with two possible solutions. However, on the grounds of simplicity it is immediately obvious that the solution embodying the minor adjustment to Rule 2 is the superior one: we must in any event have a rule which, at least, closely approximates Rule 2; the "morphophonemic solution" would only further complicate the grammar, without any apparent benefits.

5.9. Existence of Rule Reordering in Neighboring Dialects

We referred in Section 2.8 to the work of Halle, Keyser, and Saporta, in explaining dialect differences by means of reorderings within sets of rules in neighboring dialects. Comparing Rules 1 through 5, we find that we cannot take care of differences by means of reordering as the rules now stand. We can see that there are some cases of rule simplification available, however, which are obtained by the removal of an environmental constraint. (The removal in Rule 3a of the feature [-back] as compared to Rule 2 is a prime example.) In addition, we are confronted with some rule differences which seem on a conceptual level to be rule reorderings. A case in point is that of Rules 3a and 3b vs. Rule 2. The effect of the nasal environment seems to have superseded that of [+WEAK] and to apply before it, thereby forcing a separation of the sub-rules; and yet with the rules formulated in their simplest form for the two dialects, there seems to be no obvious ordering relationship among them.
There is thus an implication for further study. It may be that the simplest separate formulations of a rule or set of rules for two related dialects are not the correct ones. What may be needed is one dia-rule (or dia-set of rules) from which the two dialects diverge, regardless of the complexity of the dia-rule. The idea would have to be tested over a wide range of data, however, before its merit could be evaluated; in addition, the system would have to be able to handle, in a relatively straightforward manner, the facts of individual variation and optionality.

5.10. Distinctive-feature Notation:
Problems and Open Questions

We have run into several difficulties in rule-writing which are caused by the present formulation of distinctive-feature theory. One of the most striking of these centers about the feature we have called [+WEAK]. We have been able to name the feature and utilize it in our descriptions and rules, but there is no way of characterizing it within the feature framework, despite the fact that its nature is conceptually clear and its source appears to be essentially phonological. Items which are [+WEAK] belong in origin to the class of words traditionally called particles; included are prepositions, articles, conjunctions, and auxiliaries. These items normally do not appear under strong stress, and in fact, the most appropriate definition I can think of for [+WEAK] items is that they are able to appear in speech in forms which either are completely without a vowel (e.g., 'd
for had; 'n' for and) or have [ə] as their only vowel (e.g., [əw] for have; [əz] for has). The fact that [+WEAK] words in the short-a class tend to have [æ] rather than [ɛː] when given a stressed pronunciation seems to be a direct result of the act of "restressing" itself; yet there is no simple way of expressing that assumption in present distinctive-feature theory. (The idea of having the basic representation of [+WEAK] words in the lexicon use [ə] as the inherent vowel was considered and rejected, since we would then have to provide separate and otherwise unmotivated realization rules for the full-stressed forms, producing from "underlying" [ə] the [ɪ] of is, the [ʊ] of would, the [ə] of are, etc.)

We have already discussed the problem of representing lexically-defined optional application of rules in Section 5.3.

One of the open questions that has emerged during the formulation of rules is the validity of placing heterogeneous environments between braces. The practice has the effect of collapsing several rules into a single rule, but one questions the representational accuracy of the notation. After all, there is produced by the practice the implicit assumption that the rules are related manifestations of the same basic process; however, no such constraint is placed by the theory on the rules. It would appear to be quite possible that the notation gets in the way of satisfactory representation, and that separation of the rules might yield insights into the question of rule-reordering in neighboring dialects.
5.11. Some American English Rule Orderings

Placing Rule 2 (and its variants) within an ordered set of rules for English can be done only sketchily. If we take the rules on pp. 238-245 of Sound Pattern, we can see that it must follow the next to last of Chomsky and Halle's rules -- rule 42. They state rule 42 as

\[ \phi \rightarrow \emptyset /C \quad [+sonor]\# \text{. (It might alternatively be formulated as } [+sonor] \rightarrow [+syllab] /C \quad \#]. \]

Our Rule 2 must follow that rule, since we have the following data from most speakers: plasm has [æ] while plasma has [ɛ:]. Thus the [æ] must already have been inserted for Rule 2 to have the proper environment to yield [æ] in plasm.

Clearly also the rule which produces [ŋ],

\[ [+nas] \rightarrow [+back] / \quad [+cons] \]

must also precede Rule 2, if [ŋ] is not to be a tensing environment for New Yorkers.

One other important rule must also precede: the one deleting certain sonorants before -n't (produced, of course, by reduction of not). We may formulate it as

\[ \left\{ [+lateral] [+nas] \right\} \rightarrow \phi / \quad -n't \]

This rule is significant for our study because we have to deal with two words, can't and shan't, that, despite their inclusion of [+WEAK] morphemes (can and shall, respectively),
are pronounced almost universally in our interview population with [ε:]. In our first formulations of Rule 2 we were able to treat these items as belonging to class 22 (in which short a immediately precedes a boundary); we made the implicit assumption that the two words have become true lexical items and during their derivational history have lost their [+WEAK] characteristic, since they can never appear unstressed. The assumption we were led to in Section 5.8 that only # of the boundaries contributes to a tensing environment clouds the issue however. While we may still assume that the internal boundary is $\dagger$, it is quite possible for it to be +. In the latter case, we would go through a series of derivational steps something like:

1. ## can ## not ##
2. ## can # not ##
3. ## can # n't ##
4. ## can + n't ##
5. ## ca + n't ##

with Rule 2 operating on the output of step 5; i.e., after reduction of the internal boundary from # to + and after the deletion of the sonorants before $-n't$. Before Rule 2 applies, the [+WEAK] feature must also be lost. Interestingly, we have the alternative derivation:

1. ## can ## not ##
2. ## can # not ##
3. ## can + not ##
which gives us the lexical item cannot, with its optional pronunciations in the dialect under examination of [kənət] and [kənət]; Rule 2 again applies after the last step of the derivation.

There is another group of items to be dealt with which have [+WEAK] morphemes in their underlying representations. They are the forms which derive from auxiliaries combining with infinitival to -- haveta [həvətə, ʰəftə], hasta [həztə, ʰəstə], hadda [hədə] -- and the derived nouns havenotes and havenots. All of these are invariably pronounced with [ə] in our New York City sample. For them, we must apparently assume that Rule 2 applies first and that the forms are lexicalized later; otherwise, we should get [ɛ:].

Up to now, we have looked only at rules which must be ordered before Rule 2, but there are several important rules which must follow it. One of these is the familiar rule which transforms intervocalic t and d into a lenis, weakly voiced flap [ɖ]. The rule may be stated (in a simplified form):

\[
t, d \rightarrow ɖ / \text{Vowel} \quad (\#)\text{Vowel}
\]

Proof that this rule must follow Rule 2 emerges from the pronunciations of the following items:

- clatter -- [ə]
- bladder -- [ə]
- fatter -- [ə]
- sadder -- [ɛ:]

All these items can be pronounced with medial [ɖ]. If we order the rule in question before Rule 2, there would be no way of predicting which items with [ɖ] are pronounced...
with [æ] and which with [ɛ:]. Ordering it after Rule 2 removes the problem completely.

Other rules which must follow Rule 2 include the raising of ɔː and associated shifts in the ingliding vowel system of New York City⁴⁵ and, of course, the very late rule which erases boundaries.

⁴⁵See Labov, Social Stratification, Chap. 14, for detailed treatment of these phenomena.
APPENDIX I. BRENTWOOD, LONG ISLAND

Brentwood is a rapidly growing town about twenty-three miles out on Long Island, as measured from the border of Queens County. It was selected as an interview site to supplement our New York City data with a view toward the possibility of finding some different sorts of divergencies from Rule 2 in the New York metropolitan area. It will be seen, however, that Brentwood short-a pronunciation holds out few surprises.

Our three representatives of Brentwood are JS, CK, and JH.

JS shows variation in classes 3 (BANG) and 16 (MANUAL), and uses only [ɛ:] in weak words having nasals. He also varies in classes 7a (JAZZ) and 11a (NATIONAL). We find the unexpected [æ] in ashcans (class 10), and [ɛ:] in fascinate and chassis (class 11b), although the equivalent placid shows [æ]. But most surprising of all is his use of [ɛ:] in forbade (class 25).

CK varies in class 3 (BANG), but uses [ɛ:] in class 16 (MANUAL) and in weak words having nasals. Class 7a (JAZZ) shows only [æ]; in class 11a (NATIONAL), there is variation. Chassis is the only member of class 11b with [ɛ:]. CK, like JS, uses [ɛ:] in forbade.

JH has only [æ] in class 3 (BANG), but varies in weak words having nasals and in classes 15 (PLANET) and 16 (MANUAL). There is variation also in class 7a (JAZZ) and in
class 11a (NATIONAL), though with a very large preponderance of [ɛ:] in the latter. Fascinate has [ɛ:], and placid [æ]; the other two members of class 11b with intervocalic [s] were too difficult for JH to read. He has [ɛ:] in forbade, just as JS and CK do.

The developments in Brentwood may thus be summarized as follows:

1. The same sorts of tensing and raising before nasals (regardless of the rest of the environment) that we witnessed in New Jersey.

2. A tendency to tense and raise before prevocalic [s].

3. The regularization of forbade (and, presumably, bade) to the general pattern of Rule 2; that is, more precisely, either the removal of a lexical class of exceptions or their continued absence.
APPENDIX II. SHORT a IN PHILADELPHIA

A2.1. Introduction

Charles Ferguson has recently prepared a paper on Philadelphia short a. In this appendix we will discuss his data and conclusions, and attempt a comparison and generalization with the data we have for the New York City area.

A2.2. Ferguson's Data

He says, on page 2:

The data were collected by three means: introspection, questioning of informants, and observation of natural speech.... The informants were questioned on their pronunciation of all short a monosyllables, and a few additional items; they were four white middle-class males in their 20's and 30's, University of Pennsylvania students or graduates, who had spent their entire lives in Philadelphia.... The variety of Philadelphia English described here seems quite widespread in the metropolitan area, but other varieties also exist. The other varieties seem to share a large part of this short a system, but further investigation would be necessary for any firm statements on them.

For the purposes of close comparison with New York City pronunciation, we would like to have seen more extensive data on polysyllables, where we have come to expect the greatest variation and most complicated conditioning environments; however, since Ferguson is not only an accomplished linguistic investigator, but also a native speaker of the dialect he is describing, we shall take it for granted, for the most part, that he has isolated the relevant environments for the tensing of short a in the dialect.

46 "Short a' in Philadelphia English," [1968]. (Mimeographed.)
A2.3. Ferguson's Rules for Philadelphia

On page 5, Ferguson postulates the following rule as the "'normal' pattern":

(a) \( \overline{\varepsilon} \rightarrow \varepsilon: \quad ^{47} \quad \{ m \} \)
\( \{ n \} \)
\( \{ f \} \)
\{ C \}
\{ \# \}

He then adds on page 7:

If a suffix beginning with a vowel is added to a stem in \( \overline{\varepsilon} \), the 'normal' distribution pattern would require \( \varepsilon: \) in the extended form, but typically \( \varepsilon: \) occurs instead... The inflectional endings -es and -ing invariably preserve the identity of the stem; agentive -er generally does so, and there are occasional examples of other derivational suffixes, although most do not... This kind of exception may be summarized

(b) \( \overline{\varepsilon} \rightarrow \varepsilon:/ \overline{\text{stem}} + \quad \{ \text{es} \} \)
\{ ing \}
\{ ed \}
\{ er \}

Ferguson goes on to say, beginning on the same page:

Three common monosyllabic adjectives: bad, glad and mad 'angry' have \( \varepsilon: \) instead of the expected \( \varepsilon: \),... but there is a fourth adjective, the word sad, which shares most of the other characteristics of the three but has \( \overline{\varepsilon} \).

He writes the relevant rule as:

(c) \( \varepsilon: \rightarrow \varepsilon:/ \quad ^{d} \quad A \quad A = \text{monosyllabic adjectives except sad.} \)

\(^{47}\) We use here our own symbology rather than Ferguson's (perfectly reasonable) \( \overline{\text{ef}} \); we have also supplied parenthesized letters to label rules and lists for later reference.
He also formulates a rule concerning verbs and particles, beginning on page 9:

Four common verb forms and two archaic forms of a common verb have \( \varepsilon \) ... instead of the expected \( \varepsilon \): am, can 'be able'; ran, began, hast, hath....

\[
\begin{align*}
(d) \quad \varepsilon : & \rightarrow \varepsilon / \quad \{ \begin{array}{c}
\text{m} \\
\text{n} \\
\theta \\
\text{s} \\
\end{array} \} \\
\{ V_p \} \\
\end{align*}
\]

\( V_p \) = certain common verbs and particles.

There are three other non-verbal items which behave similarly: an, than, and, all of which... when stressed have \( \varepsilon \) instead of the expected \( \varepsilon \). 48

Ferguson gives a rule to account for such items as math, Path (< Pathology 'a course title'), Mass (< Massachusetts), Jan (< Janet), and Pam (< Pamela), on page 11:

\( e \rightarrow \varepsilon / \) shortenings.

Also mentioned, starting on the same page, are disyllabic pronunciations of: (f) family, camera, and Catholic which have \( \varepsilon \), apparently owing to their underlying forms with a medial vowel present.

Finally, Ferguson, on page 13, gives a list of exceptional items which have \( \varepsilon \) for the expected \( \varepsilon \): (g), Afghan, aft, asp, crass, damsnel, draft, gaff(e), Gath, hasp, lass, lath, Rasputin, tam, Tass, wrath -- and adds:

The items asp, hasp, Rasputin are related to a phonologically stateable subgroup of exceptions:

\[
\begin{align*}
\text{On page 14 Ferguson mentions that bade has the unexpected } [\underline{\varepsilon}] ; \text{ apparently he sees no relationship here to ran, began.}
\end{align*}
\]
(h) 'short a' in an initial stressed syllable, followed by \textit{sp}, \textit{sf}, \textit{sh}, is always \textit{a} instead of expected \textit{e}: \textit{aspect}, \textit{aspirin}, \textit{asphalt}, \textit{asbestos}.

A number of words tend to have different pronunciations (\textit{a} vs. \textit{e}:) depending on the meaning, reflecting a value of correctness or formality attributed to \textit{e}.

For example, (i) \textit{mad} in the meaning 'angry', which is its ordinary conversational meaning in Philadelphia English, has \textit{e}:, while \textit{mad} in the meaning \textit{crazy} fluctuates but often has \textit{a}, and some people have a clear minimal pair in practice although they may be confused on being questioned about the pronunciation. Similar pairs are \textit{damn} generally with \textit{e}: in expletive use but often with \textit{a} in formal reading e.g. in church; \textit{ass} with \textit{e}: in ordinary uses but \textit{a} in the book meaning of 'donkey'.

\section*{A2.4. A Comparison of Ferguson's Data With That of the New York City Area}

Ferguson's "normal rule" -- which we have labeled (a) -- can be seen to involve, almost completely, a subset of our Rule 2 for New York City. In other words, the environment for tensing in Philadelphia will also cause tensing of short \textit{a} in New York City; but tensing is more restricted in Philadelphia. There is one relatively minor exception to this generalization, however. Whereas in Philadelphia there is apparently no distinction made among consonants which occur in the rightmost portion of the environment, it will be recalled that in New York City, as stated in Rule 2, there is quite a bit of subclassification of the following consonant. Thus short \textit{a} is tensed in New York City before [f], [θ], [s] only when they are followed by voiceless segments (or a word boundary). The presumption from Ferguson's rule (a) would be that such items as \textit{affluent} and \textit{athlete} have \textit{[e:]} in Philadelphia; they invariably have \textit{[a]} in New York City. It is quite possible, however, that Ferguson
has overlooked an existent subclassification, since we find
in (f), his list of "exceptions," the word Afghan, which
has [æ] (in the first syllable) in Philadelphia just as in
New York City, where it adheres to Rule 2. Similarly, in
Rule 2 we see that [æ] is tensed before [m] and [n] only when
they are followed by nonsonorants (or a word boundary).
Family, camera, and Catholic would have [æ] in Philadelphia
if this same condition held there, regardless of whether the
tensing rule acts upon some underlying trisyllabic form or
not. One suspects that this is indeed the case, but since
Ferguson does not deal with such crucial items as Hamlet and
hamlet (which have the predicted [æ] in New York City), we
cannot be sure.

The data described by Ferguson's rule (b) not only
match what we have for New York City, they also follow
directly from rule (a), if we give # the interpretation it
has in Sound Pattern. That is to say, -es, -ing, -ed, -er
all must be preceded by # in order that the stress rules of
Chomsky and Halle operate correctly. Furthermore, Ferguson
himself states, on page 12, that mannish has [ɛː]; this is
contrary to the expectation of rule (b), but perfectly in
keeping with this interpretation of #. We therefore conclude
that rule (b) is at the same time redundant and incomplete.

Rule (c) has no counterpart in New York City English;
nor do (h) and (i).

Rule (d) is of course reminiscent of our [+WEAK]
classification for New York City speech. It will be noted
that there are some differences in both the analysis and the
data, but these differences are more apparent than real.
Ferguson chooses to separate the class into verbs and par-
ticles; but it is clear that all items in the [+WEAK] class
in New York City also have [æ] in Philadelphia, because they
either fall within the bounds of rule (d) or end with a con-
sonant other than [m], [n], [f], [θ], [s]. That leaves us
with the problem of ran, began, and bade. With bade, we are
on familiar ground, since we have equivalent data for forbade
in New York City, and for bade itself in incidental observa-
tions: both items most usually exhibit [ɛ], wherever the
spelling pronunciation with [ɛ] does not occur. The data
for ran, began with [æ] caused us to question several New
York City speakers on the matter and, surprisingly, we did
find two who use [æ] in these items and in the analogous
swam. They are definitely in the minority in New York City,
however. Ferguson appears to have missed the generalization
here; it would seem that the [+WEAK] category is pertinent
for Philadelphia too, and, in addition, there is a rule
governing irregular past tenses. As rule (d) is written,
it is a list of exceptional items, and bade, as mentioned
in footnote 48, is not even integrated with ran, began.

The data represented by rule (e) contrast interestingly
with what we have in New York City. First of all, we note
that Ferguson treats the phenomena with a "lowering" or
"laxing" rule (i.e., [ɛ:] becomes [æ]), though he gives no
rationale for doing so, and we can find none. (He gives the
same treatment to rule (d), dealing with verbs and particles, also without a rationale.) It would appear to be a complication, with no benefits, to formulate the rules in such a way that [æ] becomes [ɛ:] becomes [æ]; we reject the formulation as being counter to the principle of Occam's razor. As far as the data themselves are concerned, we find some similarities in New York City. Shortenings like Brad (< Bradford or Bradley) and Pam (< Pamela) do show a higher percentage of pronunciations with [æ] than would otherwise be expected, but with an item like math, which has apparently been integrated into the lexicon, we find no significant tendency toward [æ]-pronunciations, as compared with, say, bath.

There is little to note about the exceptions listed under (g), other than our previous treatment of Afghan and the fact that wrath exceptionally has [æ] for most New Yorkers also.

The statement leading into rule (h) is simply a self-contradiction, since Ferguson himself, on page 6, cites rasp with [ɛ:]; and, presumably, clasp, gasp, grasp also have [ɛ:].

To summarize, it would seem that the processes tending short a in Philadelphia are quite similar to those operating in New York City, though the following differences do obtain: 1. The immediately following environment is more restricted in Philadelphia, while (subject to the arguments given above) the rightmost portion of the environment may be more restricted in New York City.
2. There is no counterpart in New York City to Philadelphia's exceptional treatment of mad, bad, glad as against sad.

A.2.5. Historical Implications

Ferguson's paper devotes a good deal of space to hypothesizing the diachronic steps leading to the present short-a situation in Philadelphia and the New York City area, and trying to establish a relationship to British English short-a vs. broad-a phenomena. We will discuss his conclusions in this section.

Ferguson, beginning on page 20, gives an excellent summary of Trager's model for the diachrony of the tensing of short a, which he then rejects (with very good reason, we believe). Ferguson's synopsis and refutation follow:

[Trager's] hypothesis was that the longer, tenser vowel phoneme (our a, symbolized by him [æ^]) was an innovation which spread in the language in the following stages.

Stage 1/æ/
No significant allophonic variation.

Stage 2/æ/
Two allophones: [æ] before voiceless stops and affricate; [æ:] before voiceless spirants and all voiced consonants (longest before final consonant).

Stage 3/æ/
Same except [æ:] is higher and tense [æ^] in certain positions, especially before /m/, /n/ and voiceless spirants, but not before /ŋ/ and /l/.

Stage 4
/æ/#/æ^/
Analogical transfers preserving phonemic identity of morphemes (e.g., pad and padding, cannot and can). Other factors include

use of /æ/ in words normally weak stressed or known only from spelling. Also borrowings of /æ/ and /æ/ from speakers of other dialects.

The hypothesis was very ingenious, and on the face of it not implausible. Unfortunately, however, the æ - ħ distribution in Philadelphia English seems to go quite counter to it. If the new phonetic quality -- tensing, lengthening, or whatever -- started before voiced consonants and then spread to other positions, the Philadelphia distribution would require the explanation that the ħ later dropped before the very consonants which initially conditioned its appearance (b d g j) leaving only the few vestiges in bad, glad, mad.

To this we would add that in Trager's explanations for stages two and four, we find very strong adherence to cross-linguistic tendencies of phonological change. Thus the allophonic distribution set up for stage two is one that is quite familiar to linguists in many languages for many short vowels. In stage four we would incline toward viewing what Trager describes as "analogical transfers" as the relevance of syntactic boundaries.

Ferguson continues with a long and rather complicated argument from which we will quote extensively. Beginning on page 21:

Trager's hypothesis made no connection between the æ-ã phenomenon and the lengthening and tensing of vowels before /m n f θ s/ which has been documented for English at least from the 17th century...

It is reasonable to start with Trager's initial assumption, that at some point in time there was a single phonemic entity which served as the historical source for the two New York "short-ã" phonemes, and that this sound was a short, low, front vowel of
quality. The first step in the subsequent development was probably the lengthening of the /æ/ before voiceless spirants and nasals, the phenomenon spreading in accordance with a hierarchy of sub-conditions... The assumption of lengthening is justifiable on the grounds of the striking similarity between the patterns of occurrence of RP /a/ and the /ɛ:/ of NYE and PE: both vowels tend to be longer than the contrasting /æ/ but of different quality, and therefore suggest that the lengthening took place before the separate quality changes. The similarity of distribution is especially striking between RP and PE,... In general the incidence of /ɛ:/ in PE includes all the /a/ words of RP plus additional items and NYE includes all the PE /ɛ:/ words plus additional items....

The assumption of sub-conditions is based on the pattern of distribution of the two vowels in the positions of contrast within each dialect and the differences of distribution among the three dialects. The patterns all seem to agree that the "lead environments" i.e. the environments which most favor the change and where it comes earliest and most completely, are s# f# th st nt ns, followed in descending order by sk sp mp nd, and last of all the "lag environment" mb; the remaining, less frequent clusters are difficult to rate....It is hard to distinguish among the first set since they have all reached full "normal" status, but going down the scale the differences in proportion become clear. Starting at the end of the list, for example, RP seems to have as yet no instances of a before mb, only example and sample as frequent and unvarying

50 We quote with approval, Ferguson’s own footnote 11 here:

"This assumption may not be justified either because the vowel was more back in quality, or because there never was single entity [sic] but always phonemic fluctuation in this range or even on the grounds that the notion of a phoneme in this sense is an unsatisfactory concept for understanding historical phonology. The assumption will serve its purpose here, however, even if it is regarded merely as a convenient starting point for explanation of the kinds of linguistic change being hypothesized."

51 Ferguson’s abbreviations for respectively, Received Pronunciation, New York [City] English, and Philadelphia English.
instances of ə before mp... while before nd it has ə in demand, command, slander, etc. (alongside land, grand, pander, etc. with ə). This last environment illustrates the phenomenon of "lead words," in which a certain family of words begins the spread to a new sub-environment: most of the words with ə before nd contain -mand (but not the mand- of mandate and its derivatives).

We can hypothesize that at this point communication between the varieties of English ancestral to RP and NYE-PE lessened sufficiently that the respective quality shifts backing and raising could begin. Ferguson's projection of a first step consisting of a lengthening before voiceless spirants and nasals is, of course, a reasonable one on purely comparative and reconstructional grounds. The obvious similarity between the RP and PE-NYE phenomena is strongly suggestive of a common historical source, but the exact mechanics of the hierarchy of sub-conditions for particular shifts appears to be an open question. For example, our data from New Jersey show that ə is by no means an environment which invariably causes tensing in these related dialects. Ferguson's own data tend to dispute ə and sp as being "lead environments" when compared with mp, nd, and mb (cf. rule [h] above). One would also question Ferguson's statement that ə has reached full "normal" status in RP, since can't, shan't are the only words in the class with broad ə. Finally, one wonders why he picks the point he does as being the position where "Proto-RP" and "Proto-PE-NYE" split; this point implicitly assumes that the shift by way of sub-conditions was already complete in RP, but that it was constantly expanding in PE-NYE.

Ferguson continues, on page 23 and thereafter, by
hypothesizing a historical priority for the spread of the
tensing phenomena in PE and NYE:

The next step in the development is the spread
of lengthening raising [sic] to word-final m and
$n$, which has happened in PE and NYE but not in RP... PE has its half dozen lag words..., and NYE has only
can 'be able' with unshifted m.

Continuing with the development on the American
side, we can assume that the next step was to
spread the lengthening/raising to positions before
voiced obstruents. Here the change seems to begin
with monosyllables in -d, followed by -g and -b;
among the spirants -z probably comes first... Among
the words with voiced stops it seems probable that
the lead words are adjectives or nouns particularly
likely to stand in final position in a predicate
where they can take the characteristic lengthening
that goes with emphasis and suspensive intonations.... PE has just begun the shift before -d with bad, glad,
mad and no other examples before voiced obstruents...
[In] NYE the use of e in this position has become
"normal."

The only remaining consonants, apart from the com-
lications of r and l, are z and n. Since only NYE
of the dialects examined here has the shifted vowel
before s and none has it before t, we may assume
that the next step in the development is before z,
and that the change before n, if it ever comes, will
be the last step.

Before discussing the details of Ferguson's hypothesis
it might be best to examine his tacit assumptions. He would
appear to be postulating a mechanism which involves a strict
chronological ordering of the spread of tensing to different
sub-conditions. This would seem to be valid only in case of
a "wave-theory" model which has NYE at its center with PE
picking up, over a period of time, individual shifts in small
word classes; or, possibly, in case all shifts common to both
PE and NYE had occurred prior to the point at which the dia-
lects diverged. Neither of these assumptions is tenable even
with just the Philadelphia and New York City dialects in the picture, and with the evidence from the geographically intermediate New Jersey speakers we have looked at taken into account, the history of the shift falls into even greater uncertainty. All this is in addition to obvious errors and holes in Ferguson’s data and interpretations.

First of all, the "lag words" in PE in addition to NYE’s can (along with the other [+WEAK]-before-nasals words) do not appear to be "lag words" at all; rather they are a separate linguistically-defined subclass. Then, there is no indication that the spread to voiced obstruents chronologically preceded the spread to -s; indeed, on general phonological grounds, the opposite ordering would be the more likely one. Furthermore, the great variability of words with -z# in New York City and New Jersey would tend to make us infer that the shift before -v# and -Y# was, if anything, earlier. The argument concerning lengthening (and raising) in predicate-final position is particularly untenable since it runs in direct contradiction to the results in the [+WEAK] class: these items, when stressed (except contrastively), always appear clause-finally, and yet they strongly resist the tensing rule. Moreover, the use of e: before voiced obstruents has not become completely "normal," as the variation before -z# shows. And, finally, we have seen New Jersey speakers who show tensing before -ŋ but not before -ē.

In sum, we may say that though Ferguson’s hypothesis is an intriguing and gallant effort, the history of the tensing
of short a is still far from transparent. As Ferguson himself states, on page 25:

Only a more intensive study of large samples of speakers, with frequency counts and elicitation of speaker and hearer attitudes, could provide the necessary clarification of the competing factors in contemporary English; such a study might also serve as a basis for extrapolation to presumably similar situations in the past.
APPENDIX III. DEMOGRAPHIC DATA

Synoptic biographies of all speakers in the primary study will be presented in tabular form in this section. The speakers will be listed in the order they are encountered within the text of our discussion.
<table>
<thead>
<tr>
<th>Name</th>
<th>Sex</th>
<th>Age at Interview (Age 5-13)</th>
<th>Residence</th>
<th>Ethnic and Religious Background</th>
<th>Education</th>
<th>Occupation</th>
<th>Father's Occupation</th>
<th>Friend of Author's?</th>
<th>Additional Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSI</td>
<td>M</td>
<td>25</td>
<td>Brooklyn</td>
<td>Jewish</td>
<td>3 yrs. college (langs.)</td>
<td>Actuarial assistant</td>
<td>Small businessman</td>
<td>Yes</td>
<td>Some childhood contact with Yiddish.</td>
</tr>
<tr>
<td>SE</td>
<td>F</td>
<td>23</td>
<td>Brooklyn</td>
<td>Jewish</td>
<td>Graduate School (anthropology)</td>
<td>Student</td>
<td>Was music salesman; now unemployed</td>
<td>Yes</td>
<td>Spoke some Yiddish at home; childhood peer group mainly Italian.</td>
</tr>
<tr>
<td>JK</td>
<td>M</td>
<td>24</td>
<td>Brooklyn</td>
<td>Jewish</td>
<td>Graduate School (linguistics)</td>
<td>Student</td>
<td>H.S. teacher; was construction worker</td>
<td>Yes</td>
<td>Yiddish spoken in home, but he does not understand it.</td>
</tr>
<tr>
<td>BW</td>
<td>M</td>
<td>21</td>
<td>Queens</td>
<td>Jewish</td>
<td>Graduate School (linguistics)</td>
<td>Student</td>
<td>Mechanical engineer</td>
<td>Yes</td>
<td>Childhood peer group mainly Jewish and Negro; speech typical of New York City verracular, with no apparent social correction.</td>
</tr>
<tr>
<td>SSØ</td>
<td>M</td>
<td>13</td>
<td>Queens</td>
<td>Jewish</td>
<td>Jr. High School</td>
<td>Student</td>
<td>?</td>
<td>No</td>
<td>----</td>
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</tbody>
</table>
**TABLE 13 -- Continued**

<table>
<thead>
<tr>
<th>Name</th>
<th>Sex</th>
<th>Age at Interview</th>
<th>Residence (Age 5-13)</th>
<th>Ethnic and Religious Background</th>
<th>Education</th>
<th>Occupation</th>
<th>Father's Occupation</th>
<th>Friend of Author's?</th>
<th>Additional Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>GH</td>
<td>F</td>
<td>25</td>
<td>Queens</td>
<td>Jewish</td>
<td>1/2 yr. college (educ.)</td>
<td>Housewife</td>
<td>Small shop-owner</td>
<td>Yes (slight acq.)</td>
<td>Husband works as dispatcher in trucking firm.</td>
</tr>
<tr>
<td>SGC</td>
<td>F</td>
<td>27</td>
<td>Bronx</td>
<td>Jewish</td>
<td>3 yrs. college (art history)</td>
<td>Housewife</td>
<td>Dentist</td>
<td>---</td>
<td>The author's wife. Slight passive knowledge of Yiddish.</td>
</tr>
<tr>
<td>LS</td>
<td>M</td>
<td>25</td>
<td>Bronx</td>
<td>Jewish</td>
<td>Graduate School (pol. sci.)</td>
<td>Student</td>
<td>Garment cutter</td>
<td>Yes</td>
<td>Slight knowledge of Yiddish. Stammers a little.</td>
</tr>
<tr>
<td>NW</td>
<td>M</td>
<td>17</td>
<td>Bronx</td>
<td>Jewish</td>
<td>High School (entering college)</td>
<td>Student</td>
<td>Plumber and contractor</td>
<td>No</td>
<td>Brother of Jow (listed for Dumont, N.J.). Knows a little Yiddish.</td>
</tr>
<tr>
<td>SJ</td>
<td>F</td>
<td>27</td>
<td>Bronx</td>
<td>Jewish</td>
<td>College graduate (history)</td>
<td>Housewife; was teacher</td>
<td>Traffic mgr. for potash co.</td>
<td>Yes</td>
<td>Some passive knowledge of Yiddish. Husband is dentist.</td>
</tr>
<tr>
<td>JBa</td>
<td>M</td>
<td>14</td>
<td>Bronx</td>
<td>Anglo-Saxon Catholic</td>
<td>1 yr. High School</td>
<td>Student</td>
<td>Plumber</td>
<td>No</td>
<td>---</td>
</tr>
<tr>
<td>Name</td>
<td>Sex</td>
<td>Age at Interview (Age 5-13)</td>
<td>Residence</td>
<td>Ethnic and Religious Background</td>
<td>Education</td>
<td>Occupation</td>
<td>Father's Occupation</td>
<td>Friend of Author's?</td>
<td>Additional Notes</td>
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</tr>
<tr>
<td>PC</td>
<td>M</td>
<td>27</td>
<td>Manhattan</td>
<td>Jewish</td>
<td>Graduate School (linguistics)</td>
<td>Student</td>
<td>Printing-machine operator</td>
<td>---</td>
<td>The author.</td>
</tr>
<tr>
<td>TC</td>
<td>M</td>
<td>24</td>
<td>Manhattan</td>
<td>Greek Orthodox</td>
<td>Graduate School (psychology)</td>
<td>Student</td>
<td>Restaurant worker and slumlord</td>
<td>Yes</td>
<td>True bilingual in Greek and English. Says he has recently undertaken effort to improve speech.</td>
</tr>
<tr>
<td>KO^a</td>
<td>M</td>
<td>16</td>
<td>Manhattan</td>
<td>Irish Catholic</td>
<td>3 yrs. High School</td>
<td>Student</td>
<td>Supermarket employee</td>
<td>No</td>
<td>Brother of DO.</td>
</tr>
<tr>
<td>DO^a</td>
<td>M</td>
<td>12</td>
<td>Manhattan</td>
<td>Irish Catholic</td>
<td>6th grade High School</td>
<td>Student</td>
<td>Supermarket employee</td>
<td>No</td>
<td>Brother of KO.</td>
</tr>
<tr>
<td>RC^a</td>
<td>M</td>
<td>16</td>
<td>Manhattan</td>
<td>Catholic (?)</td>
<td>2 yrs. High School</td>
<td>Student</td>
<td>Truck-driver</td>
<td>No</td>
<td>-----</td>
</tr>
<tr>
<td>PB^a</td>
<td>M</td>
<td>16</td>
<td>Manhattan</td>
<td>Irish Catholic</td>
<td>2 yrs. High School</td>
<td>Student</td>
<td>Construction worker</td>
<td>No</td>
<td>Brother of JB.</td>
</tr>
</tbody>
</table>

**TABLE 13 -- Continued**