

graphy and settlement history of Texas. His inclusion of pejorative racial terms is a very valuable contribution. His discussion of dialect mixture, obsolescence and replacement, shows a very keen concern with the social mechanism of linguistic change. The many students of American English who will use these materials must feel a very real sense of obligation towards the author for these advances, as well as for his success in fitting this very large piece of the American puzzle into place.

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The Social Motivation of a Sound Change

The work which is reported in the following pages concerns the direct observation of a sound change in the context of the community life from which it stems.¹ The change is a shift in the phonetic position of the first elements of the diphthongs /ai/ and /au/, and the community is the island of Martha's Vineyard, Massachusetts. By studying the frequency and distribution of phonetic variants of /ai/ and /au/ in the several regions, age levels, occupational and ethnic groups within the island, it will be possible to reconstruct the recent history of this sound change; by correlating the complex linguistic pattern with parallel differences in social structure, it will be possible to isolate the social factors which bear directly upon the linguistic process. It is hoped that the results of this procedure will contribute to our general understanding of the mechanism of linguistic change.

The problem of explaining language change seems to resolve itself into three separate problems: the origin of linguistic variations; the spread and propagation of linguistic changes; and the regularity of linguistic change. The model which underlies this three-way division requires as a starting point a variation in one or several words in the speech of one or two individuals.² These variations may be induced by the processes of assimilation or differentiation, by analogy, borrowing, fusion, contamination, random variation, or any number of processes in which the language system interacts with the physiological or psychological characteristics of the individual. Most such variations occur only once, and are extinguished as quickly as they arise. However, a few recur, and, in a second stage, they may be imitated more or less widely, and may spread to the point

¹ An abbreviated version of the present paper was given at the 37th Annual Meeting of the Linguistic Society of America in New York City on December 29, 1962.

² See E. Sturtevant, *An Introduction to Linguistic Science*. New Haven: 1947. Ch. VIII: "Why are Phonetic Laws Regular?" The discussion by Martinet in his report, "Structural Variation in Language," *Proceedings of the Ninth International Congress of Linguists*, implies a similar model.

where the new forms are in contrast with the older forms along a wide front. Finally, at some later stage, one or the other of the two forms usually triumphs, and regularity is achieved.

Whereas for the first stage, we are often overwhelmed with an excess of possible explanations, we have quite the reverse situation in attempting to account for the propagation and regularity of linguistic changes. A number of earlier theories which proposed general psychological, physiological or even climatic determinants, have been discarded for some time.³ The contribution of internal, structural forces to the effective spread of linguistic changes, as outlined by Martinet,⁴ must naturally be of primary concern to any linguist who is investigating these processes of propagation and regularization. However, an account of structural pressures can hardly tell the whole story. Not all changes are highly structured, and no change takes place in a social vacuum. Even the most systematic chain shift occurs with a specificity of time and place that demands an explanation.

Widely divergent ideas appear to exist as to what comprises an explanation of the mechanism of change. The usual diachronic procedure, as followed in palaeontology or geology, is to explore the mechanism of change between states by searching for data on intermediate states. It follows that we come closer and closer to an accurate depiction of the mechanism of change as the interval between the two states we are studying becomes smaller and smaller. This is certainly the method followed by such historical linguists as Jespersen, Kökeritz and Wyld, and it is the motivation behind their extensive searches for historical detail. On the other hand, a viewpoint which favors the abstract manipulation of data from widely separated states has been propounded recently by M. Halle;⁵ explicit defense of a similar attitude may be found in H. Pilch's study of the vowel systems of Shakespeare, Noah Webster, and present-day America.⁶ Neither Halle nor Pilch distinguish the three aspects of change outlined above.

It would seem that the historical approach is more appropriate to an empirical science concerned with change, even over a narrow time span, as this approach leads to statements which are increasingly subject to confirmation or disconfirmation. At the same time, such a close view of

³ A number of these theories are reviewed by Alf Sommerfelt, "Sur la propagation de changements phonétiques," *Norsk Tidsskrift for Sprogvidenskap* IV (1930), 76-128.

⁴ *Economie des changements phonétiques*. Berne: 1955. The empirical confirmation of many of Martinet's ideas to be found in Moulton's investigation of Swiss German dialects has provided strong motivation for some of the interpretations in the present essay. In particular, see "Dialect Geography and the Concept of Phonological Space," *Word* XVIII (1962), 23-32.

⁵ "Phonology in a Generative Grammar," *Word* XVIII (1962), 67-72.

⁶ "The Rise of the American English Vowel Pattern," *Word* XI (1955), 57-63.

historical change makes us increasingly sceptical of the value of limitations on the kinds of data which may be considered: as, for instance, that the linguist explain linguistic events only by other linguistic events. One would expect that the application of structural linguistics to diachronic problems would lead to the enrichment of the data, rather than the impoverishment of it.⁷

The point of view of the present study is that one cannot understand the development of a language change apart from the social life of the community in which it occurs. Or to put it another way, social pressures are continually operating upon language, not from some remote point in the past, but as an immanent social force acting in the living present.

Sturtevant has outlined a concise theory of the spread and consolidation of language changes which consistently views this process in its social dimension. One sentence in particular will serve as an excellent theme for this investigation:

Before a phoneme can spread from word to word . . . it is necessary that one of the two rivals shall acquire some sort of prestige.⁸

It is hoped that the study of the particular case under discussion will lend support to this general view of the role of social interaction in linguistic change.

1. The island of Martha's Vineyard

The island of Martha's Vineyard, Dukes County, Massachusetts, was chosen as a laboratory for an initial investigation of social patterns in linguistic change.⁹ Martha's Vineyard has the advantage of being a self-contained unit, separated from the mainland by a good three miles of the Atlantic Ocean. At the same time, the Vineyard has enough social and geographic complexity to provide ample room for differentiation of linguistic behavior. We are also fortunate in having the records of the

⁷ For a parallel criticism of restrictions on the data imposed by Bloomfieldian linguistics, see W. Diver's review of W. P. Lehmann's *Historical Linguistics*, *Word* XIX (1963), 100-105.

⁸ *Op. cit.*, pp. 74-84. See also H. Hoenigswald's remarks in "Are There Universals of Linguistic Change?" J. S. Greenberg, ed., *Universals of Language*. Cambridge, Mass., 1963. Footnote 8: "Sound changes can apparently not be entirely predicted from internal, systemic stresses and strains, nor can they be explained as the effect of scatter around a target or norm; they have direction and are in that sense specific, much like other happenings in history."

⁹ For further details on the social and economic background of Martha's Vineyard, see my 1962 Columbia University Master's Essay, *The Social History of a Sound Change on the Island of Martha's Vineyard, Massachusetts*, written under the direction of Professor Uriel Weinreich.

Linguistic Atlas of New England (henceforth abbreviated LANE) as a background for the present investigation.¹⁰ It is just thirty years since Guy Lowman visited Martha's Vineyard; his interviews with four members of the old families of the island give us a firm base from which to proceed, and a time depth of one full generation which adds considerably to the solidity of the conclusions which can be drawn.

Figure 1 shows the general outlines of Martha's Vineyard, and Table 1 gives the population figures from the 1960 Census.

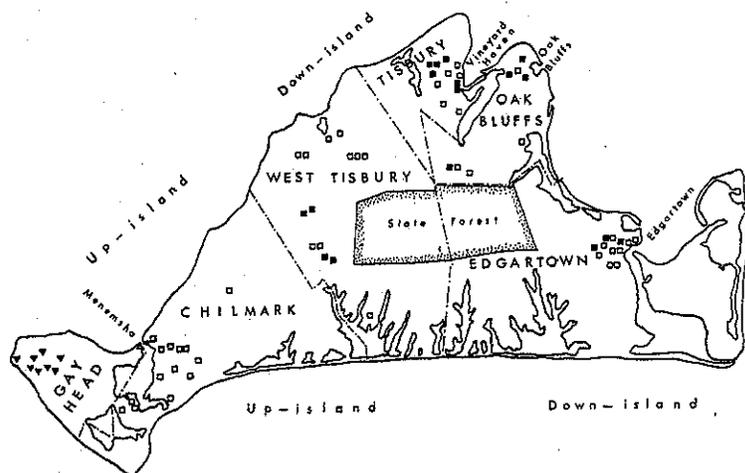


FIGURE 1. Location of the 69 informants on Martha's Vineyard. Ethnic origin of the informants indicated by the following symbols: □ English, ■ Portuguese, ▼ Indian. Symbols placed side by side indicate members of the same family.

The island is divided into two parts by an informal, but universally used distinction between *up-island* and *down-island*. *Down-island* is the region of the three small towns where almost three-fourths of the permanent population live. *Up-island* is strictly rural, with a few villages, farms, isolated summer homes, salt ponds and marshes, and a large central area of uninhabited pine barrens.

As we travel *up-island* from Vineyard Haven, we come first to the town of West Tisbury, which contains some of the most beautiful farms and fields of the island, now largely untilled and ungrazed. At Chilmark, the ground rises to a series of rolling hills which look out to the Atlantic on one

¹⁰ H. Kurath *et al.* Providence: 1941. Background information on the informants is to be found in H. Kurath, *Handbook of the Linguistic Geography of New England*. Providence: 1939.

TABLE 1. POPULATION OF MARTHA'S VINEYARD¹¹

Down-island [towns]	3,846
Edgartown	1,118
Oak Bluffs	1,027
Vineyard Haven	1,701
Up-island [rural]	1,717
Edgartown	256
Oak Bluffs	292
Tisbury	468
West Tisbury	360
Chilmark	238
Gay Head	103
Total	5,563

side, and to Vineyard Sound on the other. Chilmark's salt pond is permanently open to the Sound through a narrow channel, and so serves as a permanent harbor for the dozen fishermen who still operate from the docks of the village of Menemsha in Chilmark. Finally, at the southwest corner of the island, there is the promontory of Gay Head, and the houses of the hundred and three Indians who represent the original inhabitants of Martha's Vineyard.

The six thousand native Vineyarders fall into four ethnic groups which are essentially endogamous. First, there are the descendants of the old families of English stock, who first settled the island in the 17th and 18th centuries: the Mayhews, Nortons, Hancocks, Allens, Tiltons, Vincents, Wests, Pooles—all closely related after ten generations of intermarriage. Secondly, there is a large group of Portuguese descent, immigrants from the Azores, Madeira and the Cape Verde Islands. There are Portuguese all along the southeastern New England coast, but the Vineyard has the largest percentage of any Massachusetts county. In 1960, 11% of the population was of first or second generation Portuguese origin; with the third and fourth generation Portuguese, the total would probably come close to 20%.¹²

The third ethnic group is the Indian remnant at Gay Head. The fourth is the miscellaneous group of various origins: English, French Canadian, Irish, German, Polish. Though the sum total of this residual group is

¹¹ From U.S. Bureau of the Census. *U.S. Census of Population: 1960. Number of Inhabitants. Massachusetts*. Final Report PC(1)—23A. Washington, D.C.: U.S. Government Printing Office, 1962. Table 7, page 23-11.

¹² From U.S. Bureau of the Census, *U.S. Census of Population: 1960. General Social and Economic Characteristics. Massachusetts*. Final Report PC(1)—23c. Washington, D.C.: U.S. Government Printing Office, 1962. Table 89, page 23-260.

almost 15%, it is not a coherent social force, and we will not consider it further in this paper.¹³

Another group which will not be considered directly is the very large number of summer residents, some 42,000, who flood the island in June and July of every year. This tide of *summer people* has had relatively little direct influence on the speech of the Vineyard, although the constant pressure from this direction, and the growing dependence of the island upon a vacation economy, has had powerful indirect effects upon the language changes which we will consider.

The Vineyard is best known to linguists as an important relic area of American English: an island of r-pronouncers in a sea of r-lessness. With a three-hundred-and-twenty-year history of continuous settlement, and a long record of resistance to Boston ways and manners, the island has preserved many archaic traits which were probably typical of southeastern New England before 1800. The most striking feature, still strongly entrenched, is the retention of final and pre-consonantal /r/.¹⁴ New England short /o/ is still well represented among the older speakers. Exploratory studies of the Vineyard in 1961 showed that most of the special traits of the island speech shown on the LANE maps may still be found among traditional speakers from 50 to 95 years old.

Lexical survivals of 17th-century English are even clearer indications of the archaic nature of the Vineyard tradition. We find *bannock*, for a fried cake of corn meal, *studded* for 'dirty, roiled' water, in addition to such items as *tempest* and *buttry* listed in the LANE. Perhaps the most dramatic evidence of the fact that the Vineyard represents an underlying stratum is the presence of *belly-gut*, for a face-down sled ride. In LANE records, this form is shown on the Vineyard and in western New England: in the intervening area, it has been overlaid by three successive layers—*belly-bump*, *belly-stop*, and currently, no word at all.¹⁵

¹³ There is a sizeable number of retired mainlanders living on the Vineyard as year-round residents. While they are included in the population total, they do not form a part of the social fabric we are considering, and none of the informants are drawn from this group.

¹⁴ On the LANE maps, we find that Guy Lowman regularly recorded the up-island /r/ as [ə] in [wɛə, hɑəd, bɑən], and down-island /r/ as [ə] in the same positions. Essentially the same pattern is to be found among the older speakers today, though not with the regularity that Lowman noted. It is possible that this treatment of /r/ was in fact intended as a broad transcription, for the LANE was much more concerned with vowels than consonants.

¹⁵ See H. Kurath, *A Word Geography of the Eastern United States*. Ann Arbor: 1949. Fig. 162. *Belly-stop* (and the corresponding lexical item in other regions) has generally shifted for the younger generation to denote a flat dive into the water. Coasting is now a less important sport, and its terminology is appropriately impoverished.

As interesting as the structure of Martha's Vineyard English may be, it is not the purpose here to contrast one static system with another. We would like to understand the internal structure of Vineyard English, including the systematic differences which now exist and the changes now taking place within the island. For this purpose, we will select for study a linguistic feature with the widest possible range of variation and the most complex pattern of distribution characteristic of Martha's Vineyard.

2. Selection of the linguistic variable

It would be appropriate to ask at this point what are the most useful properties of a linguistic variable to serve as the focus for the study of a speech community. First, we want an item that is *frequent*, which occurs so often in the course of undirected natural conversation that its behavior can be charted from unstructured contexts and brief interviews. Secondly, it should be *structural*: the more the item is integrated into a larger system of functioning units, the greater will be the intrinsic linguistic interest of our study. Third, the distribution of the feature should be *highly stratified*: that is, our preliminary explorations should suggest an asymmetric distribution over a wide range of age levels or other ordered strata of society.

There are a few contradictory criteria, which pull us in different directions. On the one hand, we would like the feature to be *salient*, for us as well as for the speaker, in order to study the direct relations of social attitudes and language behavior. But on the other hand, we value *immunity from conscious distortion*, which greatly simplifies the problem of reliability of the data.¹⁶

In the exploratory interviews conducted on the Vineyard in 1961, many structural changes were noted which were plainly parallel to changes taking place on the mainland under the influence of the standard Southeast New England pattern. Changes in phonemic inventory were found: New England short /o/ is rapidly disappearing; the two low back vowels, /ɑ/ and /ɔ/ are merging. Important changes in phonemic distribution are occurring: the /or ~ ɔr/ distinction is disappearing; initial /hw/ is giving way to /f/.¹⁷

¹⁶ Many ingenious devices are needed to detect and eliminate deceit on the part of metropolitan informants, whether intended or not. On Martha's Vineyard, this is much less of a problem, but the effects of the interview situation are evident in the careful style of some informants.

¹⁷ The disappearance of New England short /o/ follows the pattern described by W. Avis, "The 'New England Short o': a Recessive Phoneme." *Language* XXXVII (1961), 544-558. Exploratory interviews at other points in southeastern New England (Woods Hole, Falmouth, New Bedford, Fall River, Providence, Stonington) indicate that the loss of the /or ~ ɔr/ and /hw ~ w-/ distinctions is parallel to that on Martha's Vineyard.

Shifts in structured lexical systems, all in the direction of regional standards, can be traced. Archaic syntactic features are disappearing. Yet as interesting as these changes may be, there is no reason to think that their distribution will follow a pattern peculiar to the Vineyard.

In the case of tautosyllabic /r/, however, we do have a linguistic variable defined by the geographical limits of the island, which follows a social pattern idiosyncratic to Martha's Vineyard. In some island areas, retroflexion is increasing, and in others, decreasing; as we will note later, the social implications of this fact can not be missed. The variations in /r/ are frequent, salient, and involve far-reaching structural consequences for the entire vowel system.

However, the preliminary exploration of the Vineyard indicated that another variable might be even more interesting: differences in the height of the first element of the diphthongs /ai/ and /au/. Instead of the common Southeast New England standard [aɪ] and [aʊ], one frequently hears on Martha's Vineyard [ɨɪ] and [ɨʊ], or even [ɘɪ] and [ɘʊ]. This feature of centralized diphthongs¹⁸ is salient for the linguist, but not for most speakers; it is apparently quite immune to conscious distortion, as the native Vineyarders are not aware of it, nor are they able to control it consciously. As far as structure is concerned, we cannot neglect the structural parallelism of /ai/ and /au/; on the other hand these diphthongs are marked by great structural freedom in the range of allophones permitted by the system. These are strictly sub-phonemic differences. Since there are no other up-gliding diphthongs with either low or central first elements in this system, it is not likely that continued raising, or even fronting or backing, would result in confusion with any other phoneme.

The property of this feature of centralization which makes it appear exceptionally attractive, even on first glance, is the indication of a complex and subtle pattern of stratification. This very complexity proves to be rewarding: for when the centralizing tendency is charted in the habits of many speakers, and the influence of the phonetic, prosodic and stylistic environment is accounted for, there remains a large area of variation. Instead of calling this "free" or "sporadic" variation, and abandoning the field, we will pursue the matter further, using every available clue to discover the pattern which governs the distribution of centralized diphthongs.

¹⁸ The terms *centralized diphthongs*, *centralization*, and *degree of centralization* will be used throughout this study to refer to the various forms of the diphthongs /ai/ and /au/ with first elements higher than [a]. It is not intended that the terms themselves should imply any process or direction of change, except when used with explicit statements to that effect.

The problem becomes all the more significant when it becomes apparent that the present trend on Martha's Vineyard runs counter to the long-range movement of these diphthongs over the past two hundred years. And while this sound change is not likely to become a phonemic change in the foreseeable future, it operates in an area where far-reaching phonemic shifts have taken place in the past. It is, in effect, the unstable residue of the Great Vowel Shift.

3. The history of centralized diphthongs

It seems generally agreed that the first element of the diphthong /ai/ was a mid-central vowel in 16th- and 17th-century English.¹⁹ We may assume that when Thomas Mayhew first took possession of his newly purchased property of Martha's Vineyard in 1642, he brought with him the pronunciation [ɨɪ] in *right*, *pride*, *wine* and *wife*. The later history of this vowel in America indicates that [ɨɪ] continued to be the favored form well into the 19th century.²⁰

When we examine the records of the LANE, we find that centralized /ai/ was a healthy survivor in the speech of the Atlas informants.²¹ We find it scattered throughout the rural areas of New England, and strongly entrenched in the Genesee Valley of western New York. It had disappeared completely from the Midland, but was quite regular—before voiceless consonants—in both the Upper and Lower South. This differential effect of voiceless and voiced following consonants was only a directing influence in the North, but stood as a regular phonetic rule in the South. On Martha's Vineyard, as on neighboring Nantucket and Cape Cod, centralized /ai/ was frequently recorded.

The history of /au/ differs from that of /ai/ more than our general expectations of symmetry would lead us to predict. There is reason to believe that in England the lowering of /au/ was considerably in advance of /ai/, and it is not likely that the same Thomas Mayhew used [ɘʊ] in *house* and

¹⁹ See O. Jespersen, *A Modern English Grammar on Historical Principles*, I, London: 1927, page 234, and H. Kökeritz, *Shakespeare's Pronunciation*, New Haven: 1953, p. 216. Among recent historical linguists, H. C. Wyld is a notable exception in positing a front first element in the transition of M.E. *i*: to Mod.E. /ai/, relying on occasional spellings with *ey* and *ei*, but without considering the many other indications of central position. See *A History of Modern Colloquial English*, Oxford: 1920, pages 223-225.

²⁰ Abundant evidence is given by George Phillip Krapp, *The English Language in America*, II, New York: 1925, pages 186-191.

²¹ The best view of the distribution of /ai/ may be had from Maps 26-27 in H. Kurath and R. McDavid, *The Pronunciation of English in the Atlantic States*, Ann Arbor: 1962. Centralized diphthongs are well known as a feature of Canadian English, where the effect of the voiceless-voiced consonant environment is quite regular.

out.²² The American evidence of the late 18th and 19th centuries, as summed up by Krapp, points to [oʊ] as the conservative, cultured form, giving way to [aʊ] or [ɔʊ], with the rural New England form as [æʊ] or [ɛʊ].²³ The Linguistic Atlas records show only a hint of parallelism of /ai/ and /au/.²⁴ We find [əʊ] mainly in eastern Virginia, before voiceless consonants, with some small representation in upstate New York, but the principal New England form of [aʊ] stood out against a background of rural and recessive [æʊ]. Martha's Vineyard shows very little centralization of /au/ in the LANE maps.

This brief review indicates that the isolated position of /au/ has facilitated phonetic variation on a truly impressive scale. The first element has ranged from [ɪ] to [ɑ], from [ɛ] to [o] all within the same general structural system. Perhaps one reason why /ai/ has not shown a similar range of variation is the existence of another up-gliding diphthong, /oi/.²⁵ In any case, as the stage is set for our present view of Martha's Vineyard diphthongs, /ai/ is well centralized, but /au/ is not. It may be too strong a statement to say that this represents the phonetic heritage of the seventeenth century Yankee settlers of the island, but we may venture to say that we have no evidence of any intervening events which disturbed the original pattern.

4. The investigation of /ai/ and /au/

The summer visitor to Martha's Vineyard gets only a fleeting impression of the native speech pattern. Seven out of every eight human beings on the island are visitors like himself. But for the Vineyarder, there is no effect of dilution. For him, summer visitors have very little status on the island and their ephemeral nature is convincingly demonstrated on the first week in September of every year, when they disappear even more quickly than the insect population of the summer months. The normal native speech of Martha's Vineyard can then be heard as the dominant sound in public places. A knock on any up-island door will no longer produce a Back Bay stockbroker, but the rightful owner in possession once again. As a rural up-islander he is very likely to use a high degree of centralization of /ai/ and /au/; but in the small town areas of down-island one may also hear this

²² Jespersen, *op. cit.*, pages 235-236. Kökeritz, *op. cit.*, pages 144-149. Wyld, *op. cit.*, pages 230-231.

²³ *Op. cit.*, pages 192-196.

²⁴ Kurath and McDavid, *op. cit.*, Maps 28-29.

²⁵ The possibility of phonemic confusion with /oi/ apparently became a reality in the 17th and 18th century, in both England and America, when both diphthongs had central first elements.

feature, particularly in words such as *right, white, twice, life, wife, like*, but not so much in *while, time, line, I, my, try*. Similarly, one may hear in the streets of Vineyard Haven centralized forms in *out, house, doubt*, but not so much in *now, how, or around*.

In order to study this feature systematically, it was necessary to devise an interview schedule which would provide many examples of /ai/ and /au/ in casual speech, emotionally colored speech, careful speech, and reading style. The first of these diphthongs is more than twice as frequent as the second, but even so, several devices were required to increase the concentration of occurrences of both.

1. A lexical questionnaire, using the regional markers shown as most significant in the maps of the LANE, supplemented with recent observations, and concentrating on the following words containing /ai/ and /au/:

spider	rareripe	iodine	dying out
sliding	swipe	quinine	flattening out
		scrimy	dowdy
white bread	nigh		outhouse
white of egg	pie	frying pan	backhouse
nightcrawler	sty	fry pan	crouch
lightning bug	firefly		mow
Italian	shiretown		rowen

2. Questions concerning value judgments, exploring the social orientation of the respondent, were so phrased as to elicit answers containing /ai/ and /au/ forms.²⁶ Answers to such questions often gave a rich harvest of diphthongal forms, with contrasting uses of emotionally stressed and unstressed variants.

3. A special reading, used mainly in the high school, was offered ostensibly as a test of the ability to read a story naturally.²⁷ Since these readings gave the most exact comparisons between speakers, they were utilized for the spectrographic measurements discussed below.

²⁶ "When we speak of the *right to life*, liberty and the pursuit of happiness, what does *right* mean? . . . Is it in *writing*? . . . If a man is successful at a job he doesn't *like*, would you still say he was a successful man?" These questions were generally successful in eliciting the informant's versions of the italicized words.

²⁷ This two-hundred word reading is constructed as a story told by a teen-age Vineyard boy, of the day he found out his father wasn't always right. An excerpt will show the technique involved: "After the high winds last Thursday, we went down to the mooring to see how the boat was making out. . . My father started to pump out the bottom, and he told me to find out if the outboard would start. I found out all right. I gave her a couple of real hard pulls but it was no dice. 'Let me try her,' my father said. 'Not on your life,' I told him. 'I've got my pride.'"

In addition to the formal interview, observations were made in a great many casual situations: on the streets of Vineyard Haven and Edgartown, in diners, restaurants, bars, stores, docks, and many places where the general sound of public conversation could be noted, if not effectively recorded. But these notations only served as a supplementary check on the tape-recorded interviews. The basic information was gathered in the course of 69 interviews with native island speakers made in three periods: August 1961, late September–October 1961, January 1962. These 69 interviews provide the basis for the discussion to follow.

The sixty-nine speakers, somewhat more than 1% of the population, represent a judgment sample of the community of native residents, and the groups which are important in the social life and value systems of the island. The sampling is proportional to area rather than population: 40 are up-islanders, and only 29 are from down-island, though over 70% of the people live down-island. The most important occupational groups are represented: 14 in fishing, 8 in farming, 6 in construction, 19 in service trades, 3 professionals, 5 housewives, 14 students. The three main ethnic groups are represented: 42 of English descent, 16 Portuguese and 9 Indian.

The locations of the 69 informants are shown on Figure 1, coded by ethnic group. It may be understood that a large proportion of those engaged in fishing are to be found in Chilmark; the farmers are well inland, mainly in West Tisbury; the service trades are heavily concentrated in Edgartown and Vineyard Haven. Of Guy Lowman's four LANE informants, one was in Chilmark, one in West Tisbury, and two in Edgartown.

As a result of these 69 interviews, we have about 3,500 instances of /ai/ and 1,500 instances of /au/ as the basic data for this study.

5. Scales of measurement

An important step was to construct a reliable, inter-subjective index to the degree of centralization. In the original transcriptions of the tape-recorded interviews²⁸ a six-point scale of height of the first element was used, ranging from the standard New England form [ai] to the fully centralized [əi]. Such a transcription was intended to push the distinctions noted to the limits of auditory discrimination. This corresponded to the practice of the LANE, in which the same number of degrees of height can

²⁸ The interviews were recorded at 3½ inches per second on a Butoba MT-5, using a Butoba MD-21 dynamic microphone. A tape recording of the standard reading, "After the high winds . . ." read by five of the speakers whose formant measurements appear on Figure 3, and other examples of centralized diphthongs used by Vineyard speakers in natural conversation, may be obtained from the writer, Department of Linguistics, Columbia University, New York 27, N.Y.

be symbolized. However, it was recognized that such fine distinctions could probably only be reproduced consistently by individuals who had attained a high degree of convergence, and then over a very short time span.

Independent instrumental measurements were used to reduce the scale by objective criteria, and to give a certain degree of objective validity to the entire system of transcription.

Acoustic spectrograms were made of eighty instances of /ai/ as spoken and recorded by seven different Vineyarders.²⁹ A study of the assembled formant patterns indicated that one particular point in time might be best suited for measuring the degree of height of the first element of the diphthong. This is shown in Figure 2, as the point where the first formant

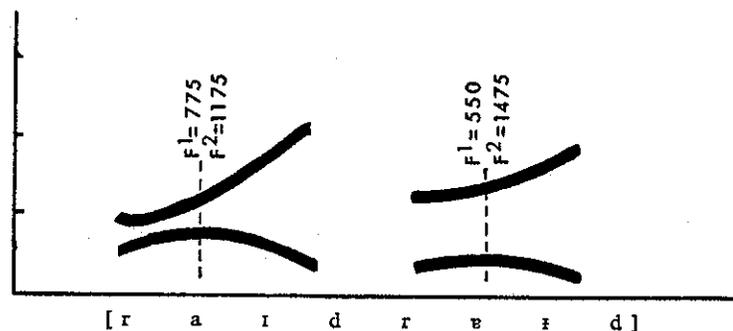


FIGURE 2. Measurement of typical /ai/ diphthongs at first formant maximum.

reaches a maximum. Measurements of the first and second formant positions at this point seemed to correspond well to the formant measurements for steady state vowels [a] to [ə] in Peterson and Barney's vowel studies.³⁰

The eighty measurements were then plotted on a bi-logarithmic scale, with abscissa and ordinate corresponding to first and second formants. The original impressionistic transcriptions were then entered for each measurement, and the result examined for clear separation of impressionistic levels. On the whole, the stratification was good: the impressionistic ratings with more open first elements showed higher first formant

²⁹ Spectrograms were made on the Kay Sonograph, using both wide and narrow bands. Seven of these, showing fifteen instances of /ai/ and /au/, are reproduced in the Master's Essay cited above.

³⁰ G. E. Peterson and H. L. Barney, "Control Methods Used in a Study of the Vowels," *Journal of the Acoustical Society of America* XXIV (1952), 175-184. The degree of overlap shown in Figure 3 seems roughly comparable to Peterson and Barney's results.

and lower second formant readings. However, the separation of grades 2 from 3, and 4 from 5, were not as clear as the others. A reduced four-step scale was then established, and the resulting correlation shown in Figure 3, and the table below.³¹

	Scale I	Scale II
1	[a]	0
2	[a ⁺]	1
3	[e ⁺]	2
4	[e]	3
5	[e ⁻]	2
6	[ə]	3

Figure 3 shows the values for Scale II mapped on the bi-logarithmic scale. This is a satisfactory result, with good separation of the four grades of centralization. We have also obtained some justification for the use of the first formant maximum in measuring spectrograms, rather than the second formant minimum. Since the lines separating the four grades parallel the second-formant axis more than the first-formant axis, we have a graphic demonstration that our phonetic impressions are more sensitive to shifts in the first formant than the second.

When this display was originally planned, there was some question as to whether it would be possible to map many different speakers on the same graph. We know that there are significant differences in individual frames of formant reference. Small children, for instance, appear to have vowel triangles organized at considerably higher frequencies than adults. The seven speakers whose readings are displayed in Figure 3 are all male; four are high school students, aged 14 to 15. But the other three are adults, from 30 to 60 years old, with widely different voice qualities.

Ideally, if we were studying the acoustic nature of the /ai/ and /au/ diphthongs, we would want a more uniform group of speakers. Secondly, we would ask for better and more uniform recording conditions: one recording was outdoors, two were in living rooms, four in an empty conference room. However, since the object of the testing was to lend objective confirmation to an impressionistic scale of discrimination, it is only realistic to use a range of recordings as varied as the body of material on which the entire study is based. Absence of separation of the four grades in Figure 3

³¹ A parallel problem of condensing a finely graded impressionistic scale is discussed in L. Gauchat, J. Jeanjaquet and E. Tappolet, *Tableaux phonétiques des patois suisses romands* (Neuchâtel: 1925), p. ix. A seven-level transcription of the mid vowels was reduced to five levels, but without the instrumental justification presented here.

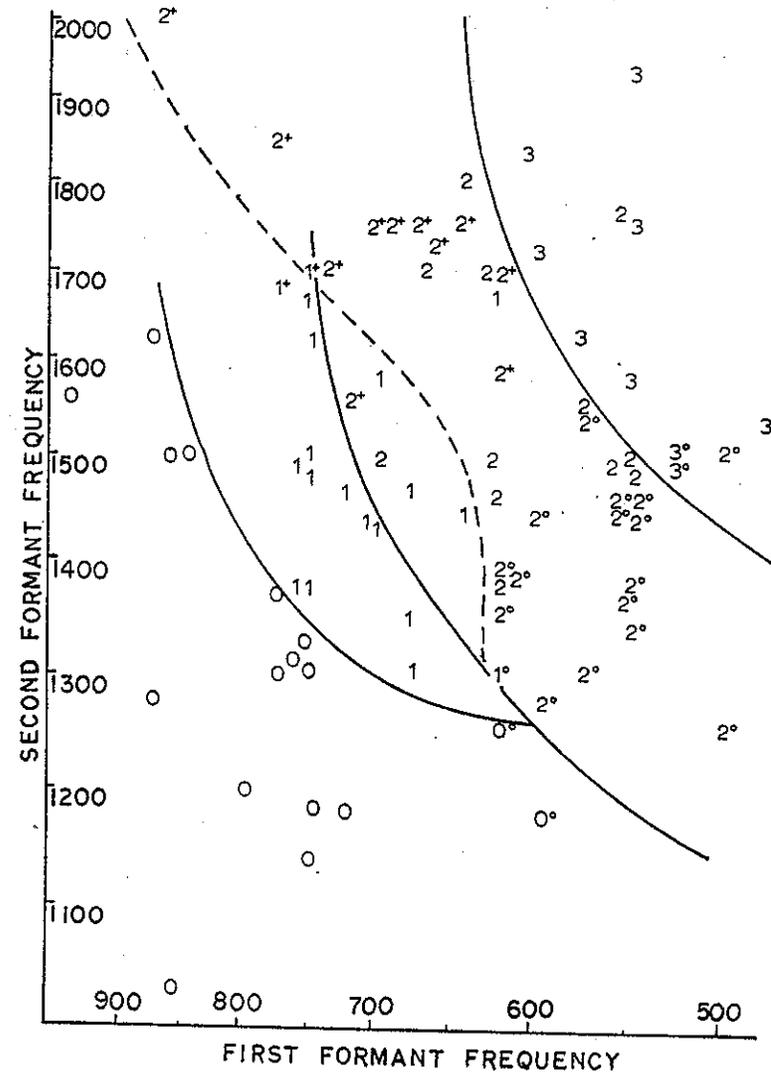


FIGURE 3. Correlation of instrumental measurement and impressionistic ratings of centralization. Numbers 0-3 are the Scale II equivalents of impressionistic ratings of height of first elements of eighty-six /ai/ diphthongs, assigned before spectrographic measurement. Seven different Martha's Vineyard speakers, males ranging from fourteen to sixty years old, are represented here. ° identifies speaker EP, age 31; + identifies speaker GW, age 15.

might then have indicated only defects in instrumental technique, but a positive result can hardly be derived from such a bias.

It is interesting to note that measurements from no one speaker are distributed over more than half of Figure 3, and some speakers are sharply limited to a narrow sector—still occupying portions of all the grades of centralization. For instance, the highly centralized speaker EP, aged 31, accounts for all of the readings in the lower right portion marked with a ° sign: 0°, 2°, etc. He shows no readings higher than 650 or 1500 cps. On the other hand, speaker DW, aged 15, also highly centralized, accounts for the upper left portion; his readings, marked with a + sign, are all higher than 625 or 1550 cps. Again, speaker GM, aged 15, is limited to a belt from lower left to upper right, filling the space between the two just mentioned. Despite the differences in vowel placement, these seven speakers utilize the same dimension to produce the effect of centralized or open vowels: widely separated formants for centralized vowels, adjacent formants for open vowels. The opposition, though not distinctive, is clearly seen as ranging from compact to (relatively) non-compact.

This display then indicates for us that the reduced impressionistic scale shows good stratification in terms of physical parameters, and we may proceed to employ such ratings with some confidence in their validity.

6. The linguistic environment

We can now plot the distribution of centralized forms for each speaker. This is done for each of the 69 interviews on a chart such as is shown in Figure 4. We find that these charts fall into three basic types:

- uncentralized norms: all words, or almost all, fall into Grade 0, with at most only a few Grade 1's in favored words such as *right* and *out*.
- centralized norms: most words with Grade 2, and only a few Grade 1's for unfavored forms, such as *time* and *cow*.
- phonetic conditioning: the influence of the phonetic environment is reflected in a range of values from Grades 0 to 2. Figure 4 is an example of this type.

Such phonetic conditioning is reminiscent of the phonetic regularity found in the southern United States.³² But on Martha's Vineyard, the distribution is more complex, and nowhere codified with the precision to be found in the South. Before proceeding to chart the various social factors which influence this feature, we should consider the influence of the linguistic environment, and primarily phonetic conditioning.

³² See Edwin F. Shewmake, *English Pronunciation in Virginia*. Davidson, N.C.: 1927.

FIGURE 4. PHONETIC DETERMINATION OF CENTRALIZATION.
CENTRALIZATION CHART FOR NORTH TISBURY FISHERMAN GB

Grade	0	1	2	0	1	2	
right	++	++++	++++	++++	++	++++	out
night	++	++	++	+			about
white			+	+			trout
like		++			+		house
sight	+++	+					
quite	+			++	+		south
striped	++			+	+++		mouth
swiped		+		+	+		couch
wife	++			++			now
life	++	+++	+	++			how
knife	+		+	++			
spider			+	++			sound
side	++++	+		++++			down
tide	+++			+++			
applied	++++	+		++			
characterized	+			+++			round
Ivory			+	+			hound
live	+		+	+			ground
five		+					
I've		+					
by		+					
fly in			+				
high							
fryin	+						
why		+					
my	++						
try		+					
I'll	+						
piles	+						
while	+++						
mile	+						
violence	+						
shiners	+						
kind	+						
iodine		+					
quinine	+						
time	++						
line		+					
I	+	++++	++++				
		+	++++				
fired	+						
tire	+						

CI /au/: 0.39

CI /ai/: 0.75

SEGMENTAL ENVIRONMENT. The influence of the *following consonant* may be indicated by tabulating five general articulatory dimensions:

	Not favoring centralization		Favoring centralization
(a)	sonorants	zero final	obstruents
(b)	nasals		orals
(c)	voiced		voiceless
(d)	velars	labials	apicals
(e)	fricatives		stops

If we apply these oppositions in the order given, from (a) to (e), we arrive at a consonant series from most favoring to least favorable to centralization, which seems to conform quite well to the facts:

/t, s: p, f: d, v, z: k, θ, ð: ø: l, r: n: m/³³

The *preceding consonant* follows a rather different pattern, almost the reverse, and has considerably less effect. The most favoring initial consonants in centralized syllables are /h, l, r, w, m, n/, with the glottal stop allophone of zero heading the list. Thus the most favored words are *right, wife, night, light, nice, life, house, out*.

PROSODIC FACTORS. Stress regularly increases the degree of centralization for speakers with type *b* and type *c* charts. This is not at all an obvious rule, for the speech of many metropolitan areas shows the opposite tendency: one may note an occasional centralized diphthong in rapid reduced forms, but the same word under full stress is completely uncentralized. This corresponds to the difference between a centralized occurrence and a centralized norm.

A typical case of centralization under stress occurs in this excerpt from a story told by a North Tisbury fisherman:

Why I could do anything with this dog. I used to drop a [naɪf] or my handkerchief or something, and I'd walk pretty near a quarter of a mile, and I'd stop and I'd turn to the dog: "You go get that! Where'd I lose that [naɪf]!"

STYLISTIC INFLUENCE. ~~While we find that most urban speakers have a variety of shifting styles of speech, and that interviews under varying conditions will produce varying counts of phonological features, this is not the case with most Vineyarders. The majority are essentially single-style speakers. Sometimes the conversation will take a livelier tone, or a more~~

³³ /ai/ and /au/ are rare before /b, g, ŋ, ð, ʃ/; /t/ includes [ʔ]. The non-distinctive [ʔ] variant of zero onset also favors centralization heavily, as in the /l/ forms of Figure 3.

formal aspect, but the percentage of centralized forms is not significantly affected. Changes in centralization are apparently aspects of a pattern which develops over longer periods of time.³⁴

LEXICAL CONSIDERATIONS. A few special words are given greater centralization than their phonetic form or prosodic position would usually account for. An example is *sliding*, meaning coasting with a small sled. It may be that confusion with an alternant form *sledding* is responsible, or that words which originate in childhood, and are seldom spelled, are more prone to centralization.

7. Distribution by age and time

The over-all degree of centralization for each speaker is expressed by the mean of the numerical values of the grades of each instance listed on the chart. Thus on Figure 4, the centralization index for /ai/ (CI /ai/), is 0.75, and the index for /au/ (CI /au/), is 0.39. We can then find the mean CI for any group of persons by averaging the CI for the members of the group.

We may first wish to see if centralization varies with the age level of the speaker. Table 2 indicates that it does.

TABLE 2. CENTRALIZATION INDEXES BY AGE LEVEL

	CI /ai/	CI /au/
over 75	0.25	0.22
61 to 75	0.35	0.37
46 to 60	0.62	0.44
31 to 45	0.81	0.88
14 to 30	0.37	0.46

Centralization of /ai/ and /au/ appear to show a regular increase in successive age levels, reaching a peak in the 31 to 45 group. We must now consider the reasons for assessing this pattern as evidence for an historical change in the linguistic development of Martha's Vineyard. Is this an example of sound change, or is it merely evidence for a regular change in speaking patterns which is correlated with age?

At this point it is necessary to consider the general question as to whether sound change can be directly observed. The well-known statement of Bloomfield seems to contradict this possibility:

The process of linguistic change has never been directly observed; we shall see that such observation, with our present facilities, is inconceivable.³⁵

³⁴ One small stylistic influence which appeared was in the standard reading. Those with centralized norms, whose charts were of type *b* and *c*, had slightly higher indexes of centralization for reading than for conversation. The opposite effect was noted for those with uncentralized norms.

³⁵ *Language* (New York: 1933), p. 347.

I don't know how this would be true

When this opinion is viewed in the light of Bloomfield's entire discussion of phonetic change, it appears to be strongly motivated by arguments for the absolute regularity of sound change. Bloomfield wishes to show that such change is quite autonomous, "a gradual favoring of some non-distinctive variants and a disfavoring of others," and quite distinct from the normal fluctuation of non-distinctive forms, "at all times highly variable." Yet since direct observations will always pick up this normal fluctuation, "even the most accurate phonetic record of a language at any one time could not tell us which phonemes were changing."³⁶ The changes we do observe are likely to be the effects of borrowing and analogic change.

Hockett, while recognizing the possibility of divergent views, has further refined the doctrine of imperceptible changes as a basic mechanism of linguistic change. Movements of the center of the normal distribution of random variations are, for all practical purposes, not subject to direct observation,³⁷ while the cruder forms of change which are observed must be due to minor mechanisms. Weinreich has pointed out the theoretical limitations of this position;³⁸ here we may profitably examine the result of applying such neo-grammarians thinking to empirical observations.

The prototype of close studies of sound change in a single community is Gauchat's 1899 investigation of the patois of Charmey, in French-speaking Switzerland.³⁹ Gauchat observed and tabulated differences in six phonological features in the speech of three generations: speakers over 60 years old, those between 30 and 60, and those under 30. Hermann returned to the scene in 1929, one generation later, to investigate four of these features: his results confirmed the interpretation of Gauchat's data as evidence for historical change, since three of the four had advanced considerably in the same direction. Yet Hermann also showed that real time depth is essential for an accurate view, since the fourth feature had not changed since 1903, and was apparently subject to a number of conflicting influences.⁴⁰

The neo-grammarians viewpoint is that such observable shifts are the

³⁶ *Ibid.*, p. 365.

³⁷ *A Course in Modern Linguistics* (New York: 1958), p. 439.

³⁸ Review of Hockett, *A Course in Modern Linguistics*, in *Romance Philology* XIII (1959), pp. 329-332. "It is hard to feel comfortable with a theory which holds that the great changes of the past were of one kind, theoretically mysterious and interesting, whereas everything that is observable today is of another kind, transparent and (by implication) of scant theoretical interest."

³⁹ *L'unité phonétique dans le patois d'une commune*. Halle: 1905.

⁴⁰ "Lautveränderungen in der Individualsprache einer Mundart," *Nachrichten der Gesellschaft der Wissenschaften zu Göttingen, Philosophisch-historische Klasse* XI (1929), 195-214.

results of a series of borrowings, imitations, and random variations.⁴¹ These complicated explanations could be applied without contradiction to the present observations on Martha's Vineyard. But we need not make the gratuitous assumption that sound change is something else again, an ineluctable process of drift which is beyond the scope of empirical studies. Here I would like to suggest that the mixed pattern of uneven phonetic conditioning, shifting frequencies of usage in various age levels, areas, and social groups, as we have observed it on Martha's Vineyard, is the process of linguistic change in the simplest form which deserves the name. Below this level, at the point of individual variation, we have events which are sub-linguistic in significance. At the first stage of change, where linguistic changes originate, we may observe many sporadic side-effects of articulatory processes which have no linguistic meaning: no socially determined significance is attached to them, either in the differentiation of morphemes, or in expressive function. Only when social meaning is assigned to such variations will they be imitated and begin to play a role in the language. Regularity is then to be found in the end result of the process, as Sturtevant has argued, and not in the beginning.⁴²

If we now accept the evidence we have on hand as adequate in quantity, as reliable and valid, we must still decide if this particular case is an example of a change in community habits of speech. Two aspects of the question seem to make a good case for a positive answer.

First, the records of the LANE show only moderate centralization of /ai/ for the four informants of 1933, aged 56 to 82. It is impossible to calibrate the Lowman transcription against our present scale, especially since his data put more stress on short utterances with stressed, elicited forms. But if we take the LANE symbol [e] as equivalent to our present [e] of Grade 2, it appears that these speakers had centralized norms for /ai/ averaging about 0.86, as high as the highest point reached in our sample for age level 60 to 90, but only half as high as the highest point for age level 30 to 60. If we weigh their performance against a matched group of present-day speakers, we may conclude that there has been an intervening drop of centralization before the present rise.

⁴¹ Such arguments were indeed advanced in some detail to explain Gauchat's results, by P. G. Goidanich, "Saggio critico sullo studio de L. Gauchat," *Archivio Glottologico Italiano* XX (1926), pp. 60-71, [cited by Sommerfelt, *op. cit.*]. As implausible as Goidanich's arguments seem, they are quite consistent with Bloomfield's position cited above.

⁴² Sturtevant, *op. cit.*, pp. 78-81. See Hoenigswald, *op. cit.*, for further considerations which support this view.

Secondly, the question of /au/ is conclusive. The LANE informants had an average rating of 0.06 for CI /au/: that is, for all practical purposes, zero. The record shows a steady rise in centralization of /au/—which we have seen to be a completely new phenomenon in Martha's Vineyard English—reaching indexes of well over 1.00 for most old family, up-island speakers, and going as high as 2.11 in one case. No postulated change in speaking habits with age could account for this rise.

The fact that the amount of centralization for the very old, and the very young speakers, is at a minimum, shows that the effect of age cannot be discounted entirely, and it may indeed be a secondary factor in this distribution over age levels.

8. Possible explanations for a rise in centralization

So far, our discussion of centralization, the dependent variable under study, has been merely descriptive. As we turn to the problem of explanation, we are faced with the question of what independent variables to examine. Certainly the structural parallelism of /ai/ and /au/ is significant here.⁴³ Let us assume for the moment that centralization declined to a low point in the late 1930's, and then, after the war, began to rise. At this point we find that a rising first element of /ai/ carries the first element of /au/ with it. Such a change in direction would seem to give us a plausible explanation for the parallelism being called into play at this time, rather than the assumption that it suddenly began to operate after a three hundred year hiatus.

There remains the prior question, that of explaining (or giving a larger context for) the general rise of centralization on the island. Why should Martha's Vineyard turn its back on the history of the English language? I believe that we can find a specific explanation if we study the detailed configuration of this sound change against the social forces which affect the life of the island most deeply.

If we choose a purely psychological explanation, or one based only on phonological paradigms, we have as much as said that social variables such as occupation, income, education, social aspirations, attitudes, are beside the point. We could only prove such a claim by cross-tabulating the independent social variables, one at a time, with the degree of centralization, and showing that any greater-than-chance correlations are spurious.

⁴³ We might wish to construct a rule here which would, in essence, convert [+compact] to [-compact], simpler by one feature than a rule which would merely convert [ai] to a centralized form. While such a statement is satisfying in its simplicity and neatness, it should be clear from the following discussion that it would explain only a small part of the mechanism of linguistic change.

However, our first attempts reveal some striking social correlations which are not easily explained away. Table 3 shows us the geographical bias of centralization, favoring rural up-island against small-town down-island areas. Table 4 shows the occupational biases, with fishermen at the top and farmers at the bottom. If we add to this the data of Table 5, showing the distribution by ethnic groups, we find ourselves embarrassed with

TABLE 3. GEOGRAPHICAL DISTRIBUTION OF CENTRALIZATION

	CI /ai/	CI /au/	CI /ai/	CI /au/
Down-island			0.35	0.33
Edgartown	0.48	0.55		
Oak Bluffs	0.33	0.10		
Vineyard Haven	0.24	0.33		
Up-island			0.61	0.66
Oak Bluffs	0.71	0.99		
No. Tisbury	0.35	0.13		
West Tisbury	0.51	0.51		
Chilmark	1.00	0.81		
Gay Head	0.51	0.81		

TABLE 4. CENTRALIZATION BY OCCUPATIONAL GROUPS

	CI /ai/	CI /au/
fishermen	1.00	0.79
farmers	0.32	0.22
others	0.41	0.57

TABLE 5. CENTRALIZATION BY ETHNIC GROUPS

Age Level	English		Portuguese		Indian	
	CI /ai/	CI /au/	CI /ai/	CI /au/	CI /ai/	CI /au/
over 60	0.36-0.34		0.26-0.26		0.32-0.40	
46 to 60	0.85-0.63		0.37-0.59		0.71-1.00	
31 to 45	1.08-1.09		0.73-0.83		0.80-1.33	
under 30	0.35-0.31		0.34-0.52		0.47-0.88	
all ages	0.67-0.60		0.42-0.54		0.56-0.90	

too many explanations. Are these social variables connected in any demonstrable way with the linguistic change? Are they truly independent from one another, or are some of the correlations spurious, the result of some dependency on a larger factor which is logically prior to these? If such a larger pattern exists, we must ask how did it originate, and in what way is it connected with the linguistic events. A simple-minded book-keeping approach will not answer such questions. We will have to gain some insight into the social structure of the island, and the pressures which motivate the social changes of present-day Martha's Vineyard.

9. The interaction of linguistic and social patterns⁴⁴

To understand Martha's Vineyard, we must first realize that this is a very beautiful place, and a very desirable place to live. But it is not an easy place to earn the kind of living which agrees well with the achievement orientation of modern American society. The 1960 Census shows that it is the poorest of all Massachusetts counties: it has the lowest average income, the highest number of poor people, and the smallest number of rich people.⁴⁵ The Vineyard has the highest rate of unemployment: 8.3% as against 4.2% for the state, and it also has the highest rate of seasonal employment. One might think that life on the island is nevertheless easier: perhaps the cost of living is lower. Nothing could be further from the truth: the high cost of ferrying is carried over to a higher price for most consumer goods. As a result, there are more married women with young children working than in any other county: 27.4% as against 17.3% for the state as a whole.

The reason for this economic pressure, and the resulting dependency on the tourist trade, is not hard to find. There is no industry on Martha's Vineyard. The island reached its peak in the great days of the whaling industry; for a time, commercial fishing in the local waters buoyed up the economy, but the run of fish is no longer what it used to be. Large scale fishing is now out of New Bedford on the Grand Banks. Farming and dairying have declined sharply because of the ferry rate, which raises the cost of fertilizer but lowers the profit on milk.

The 1960 Census shows us that the island's labor force of two thousand souls is heavily occupied with service trades. Only 4% are in manufacturing, one seventh of the state average. Five percent are in agriculture,

⁴⁴ The information given in the following discussion of social patterns on Martha's Vineyard was derived in part from conversations with the 69 informants. Even more significant, perhaps, was information gained from discussions with community leaders who were in a position to view these patterns as a whole. I am particularly indebted to Mr. Benjamin Morton, head of the Chamber of Commerce, Mr. Henry Beetle Hough, editor of the *Vineyard Gazette*, and Mr. Charles Davis, superintendent of the Martha's Vineyard Regional High School. Among my informants, I am especially grateful to Mr. Donald Poole of Chilmark, Mr. Benjamin Mayhew, selectman of Chilmark, and Mr. Albert Prada, town clerk of Edgartown.

⁴⁵ Table 36 of the 1960 census report PC(1)—23c, cited above in footnote 12, shows some striking contrasts among Massachusetts counties. The median family income for the Vineyard is \$4,745, as against \$6,272 for the state as a whole. Barnstable County (Cape Cod) and Nantucket are also dependent on a vacation economy, yet they show median incomes of \$5,386 and \$5,373. The most agricultural county in Massachusetts, Franklin, shows a median of \$5,455. The state as a whole has only 12.4% of families with incomes under \$3,000; the Vineyard has 23%. The state has 17.0% with incomes over \$10,000; the Vineyard has only 6.6%.

2.5% in fishing, and 17% in construction; these percentages are five, ten and three times as high as those for the state as a whole.⁴⁶

These economic pressures must be clearly delineated in order to assess the heavy psychological pressures operating on the Vineyarders of old family stock. Increasing dependence on the summer trade acts as a threat to their personal independence. The more far-seeing Vineyarders can envisage the day when they and their kind will be expropriated as surely as the Indians before them. They understand that the vacation business cannot help but unbalance the economy, which produces far too little for the summer trade, but far too much for the winter. Yet it is very hard for the Vineyarder not to reach for the dollar that is lying on the table, as much as he may disapprove of it. We have already noted that many Vineyarders move out of their own homes to make room for summer people.

Those who feel that they truly own this island, the descendants of the old families, have a hard time holding on. Summer people, who have earned big money in big cities, are buying up the island. As one Chilmarker said, "You can cross the island from one end to the other without stepping on anything but *No Trespassing* signs." The entire northwest shore has fallen to the outsiders. In Edgartown, the entire row of spacious white houses on the waterfront has capitulated to high prices, with only one exception, and the descendants of the whaling captains who built them have retreated to the hills and hollows of the interior.

This gradual transition to dependency on, and outright ownership by the summer people has produced reactions varying from a fiercely defensive contempt for outsiders to enthusiastic plans for furthering the tourist economy. A study of the data shows that high centralization of /ai/ and /au/ is closely correlated with expressions of strong resistance to the incursions of the summer people.

The greatest resistance to these outsiders is felt in the rural up-island areas, and especially in Chilmark, the only place where fishing is still a major part of the economy.⁴⁷ Chilmarkers are the most different, independent, the most stubborn defenders of their own way of living. In order to assess the changing orientation of island groups towards the old

⁴⁶ See Table 82 of the 1960 census report, as in footnote 45.

⁴⁷ Despite the low number of Vineyarders listed as fishermen by occupation in the Census, a much larger number of islanders rely upon part-time fishing to supplement their income. In particular, harvesting bay scallops in the salt ponds is a prized source of revenue in the summer months. A great deal of local legislation is designed to protect the professional fishermen from the great number of part-time scallopers taking in too large a share. Much discussion and considerable bitterness develops as a result of this conflict of interest, in which the truly professional Chilmarkers are, psychologically at least, on top.

family tradition, I included in my interview a battery of questions dealing with the semantics of the word *Yankee*. One question read: "Where on the island would a typical old Yankee be most apt to live?" By far the most common answer was "Chilmark." Chilmarkers were named most often as examples of "typical old Yankees."

Chilmarkers pride themselves on their differences from mainlanders:

You people who come down here to Martha's Vineyard don't understand the background of the old families of the island . . . strictly a maritime background and tradition . . . and what we're interested in, the rest of America, this part over here across the water that belongs to you and we don't have anything to do with, has forgotten all about. . . .

I think perhaps we use entirely different . . . type of English language . . . think differently here on the island . . . it's almost a separate language within the English language.

To a large extent, this last statement is wishful thinking. Much of the language difference depended upon whaling terms which are now obsolete. It is not unnatural, then, to find phonetic differences becoming stronger and stronger as the group fights to maintain its identity. We have mentioned earlier that the degrees of retroflexion in final and pre-consonantal /r/ have social significance: at Chilmark, retroflexion is at its strongest, and is steadily increasing among the younger boys.

In Table 3, we note that centralization is higher up-island than down-island, and highest of all in Chilmark. In Table 4, we note that of all occupational groups, fishermen show the highest centralization. Our total number of cases is too small to allow extensive cross tabulations, but if we take the group of Chilmark fishermen in the middle age level, from 30 to 60, we find that these five informants have average indexes of 1.48 for /ai/ and 1.18 for /au/, higher than any other social group which we might select on the island. Conversely, let us list the six speakers with the highest degree of centralization in order of CI /ai/—that is, the upper ten percent:

	CI /ai/	CI /au/
Chilmark fisherman, age 60	1.70	1.11
Chilmark fisherman, age 31	1.65	2.11
Chilmark fisherman, age 55	1.50	1.24
Edgartown fisherman, age 61	1.43	1.07
Chilmark fisherman, age 33	1.33	0.79
Edgartown fisherman, age 52	1.31	1.31

It should be noted here that the two Edgartown fishermen listed are brothers, the last descendants of the old families to maintain their position on the Edgartown waterfront in the face of the incroachment of summer people noted above.

We have now established within reason that the strong upturn in centralization began up-island, among Chilmark fishermen, under the same influence which produced parallel results among the few Edgartown residents who shared their social orientation.

Table 5 shows the developments by age level for each of the three main ethnic groups. All of the examples we have used so far deal with the English group of old family descent; in Chilmark, this is the only group of any size. Let us continue to follow the development of this group through the succeeding age levels, and examine the interaction of social and linguistic patterns.

We see that centralization reaches a peak in the age level from 30 to 45, and that centralization of /au/ has reached or surpassed /ai/ at this point. This age group has been under heavier stress than any other; the men have grown up in a declining economy, after making a more or less deliberate choice to remain on the island rather than leave it. Most of them have been in the armed forces during World War II or in the Korean conflict. Many have been to college, for the English descent group has a strong bent towards higher education. At some point, each of these men elected to make a smaller living on Martha's Vineyard, while many of their contemporaries left to gain more money or more recognition elsewhere.

Severe strains are created in those who are pulled in both directions; the traditional orientation of Martha's Vineyard has long been inward and possessive, yet the pull of modern achievement-oriented America is even greater for some.

I think actually it's a very hard thing to make that decision. . . . It comes to you later, that you should have made it before. I have another son—Richard—is an aeronautical engineer. He really loves the island. And when he decided to be an aeronautical engineer we discussed it—at length—and I told him at that time: you just can't live on Martha's Vineyard. . . . He works at Grumman, but he comes home every chance he gets and stays just as long as he can.

The speaker is a woman of 55, a descendant of the Mayhew family, who left business school in Boston, and returned to the island to become a real estate agent. Her son made the opposite choice; but another family, of long standing in Chilmark, had this to report about their son:

. . . we had an idea that he'd go away to school, but he really didn't want to go away. . . . When he was at Chauncey Hall, they tried to get him to go to M.I.T.; but he said no, he didn't want to go anywhere where he had to learn to do something that he couldn't come back to this island.

We can learn a great deal about centralization by studying such histories of particular families. The two speakers who head the list of centralized speakers on page 298 are father and son. The father, a Chilmark lobsterman,

is a thoughtful, well-read man with a passionate concern with the history of the whaling industry; he is perhaps the most eloquent spokesman for the older Vineyard tradition, and the author of the quotation on page 298. His son is a college graduate who tried city life, didn't care for it, came back to the island and built up several successful commercial enterprises on the Chilmark docks. He shows a high CI /au/ at 2.11, considerably more centralized than anyone else I have heard at Chilmark. One evening, as I was having dinner at his parents' house, the conversation turned to speech in general, without any specific reference to /ai/ or /au/. His mother remarked, "You know, E. didn't always speak that way . . . it's only since he came back from college. I guess he wanted to be more like the men on the docks. . . ."

Here we see a clear case of hypercorrection at work, and from other evidence as well, it is reasonable to assume that this is a very regular force in implementing the phonetic trend we are studying.

When we come to high school students, we must realize that many of the young people from the old-family group do *not* intend to remain on the island, and this is reflected in the lower average index of Table 5. Comparatively few of the sons of the English descent group will be earning their living on the Vineyard in the next twenty years. In a series of interviews in Martha's Vineyard Regional High School, it was possible to compare speaking habits very closely by means of the standard reading, "After the high winds. . . ." A marked contrast was observed between those who plan to leave the island and those who do not. The latter show strong centralization, while the former show little, if any. To highlight this point, we may take four 15-year old students: the two down-islanders who intend to leave for careers in business and finance, show little or no centralization; the two up-islanders who hope to go to college and return to make their living on the island, show considerable centralization.⁴⁸ The indexes speak for themselves:

Down-island, leaving	Up-island, staying
0.00—0.40	0.90—1.00
0.00—0.00	1.13—1.19

One of the down-islanders, from Edgartown, has fallen very much under the influence of the upper class Bostonian summer visitors. He has lost all constriction in tautosyllabic /r/, and has a fronted low center vowel as well in such words as [ka:], 'car'.

⁴⁸ On the question of leaving the island, one of these boys said: ". . . I can't see myself off island somewhere . . . I like it a lot here, like my father goes lobstering. That's quite a bit of fun . . . as long as I get enough money to live and enjoy myself. I was figuring on . . . going into oceanography because you'd be outdoors: it wouldn't be office work."

10. Centralization among other ethnic groups

We can now turn to the special position of the Portuguese and Indian ethnic groups, and see if the same approach can account for the distribution of centralized forms among them.

The most common view of the early Portuguese immigration is that the settlers came from an island with a very similar economy, shared the Yankee virtues of thrift and industry, and fitted into the island life almost perfectly. The Azoreans who came first seemed to have a strong inclination for farming and fishing, rather than factory work; in the Vineyard's rather diffuse economy, there was little concentration of the Portuguese into the kinds of industrial pockets we find on the mainland.⁴⁹ Even among the tough-minded Chilmarkers, we find a certain grudging acknowledgement of the Yankee-like orientation of the Portuguese:

. . . they worked, that's why they were respected. Nobody ever particularly interfered with 'em. You hear somebody make a remark about the dumb Portagee or something, but actually I think they've been pretty well respected because they mind their own business pretty well. They didn't ask for anything.

It took some time, however, for the Portuguese descent group to make its way into the main stream of island life. Inter-marriage of Portuguese and Yankee stock occurs, but it is rare. Second-generation Portuguese certainly do not feel at home in every situation: as some Vineyarders put it, these Portuguese have "a defensive attitude." A member of the English group will as a rule speak his mind freely, condemning the summer people and his neighbors with equal frankness. But the second-generation Portuguese never criticizes the summer people in the interview situation, and he is extremely wary of criticizing anyone. When the word *Yankee* is introduced, he shifts uneasily in his chair, and refuses to make any comment at all.

While the speech of the Portuguese second generation is free of any detectable Portuguese influence,⁵⁰ it is also lacking the special Vineyard flavor. If we examine the Portuguese age groups over 45 in Table 5, which contain a large proportion of second-generation speakers, we find little or no centralization.

This is not the case with third- and fourth-generation Portuguese speakers. In this group, we find centralization very much on the increase, particularly with /au/. In Table 5, we see that the age group from 31 to 45 has a very

⁴⁹ In many ways, the Vineyard seems to be more democratic than the mainland. I have heard on the mainland strong expressions of hostility between Portuguese groups from the Azores and those from the Cape Verde Islands, but never on Martha's Vineyard.

⁵⁰ On the other hand, I have heard a strong Portuguese accent from a second generation Portuguese man, about 40 years old, who was raised on a farm near Taunton, Mass.

high degree of centralization. This age level contains a great many third-generation Portuguese. It is the first Portuguese group which has entered the main stream of island life, occupying positions as merchants, municipal officers, and many other places of secondary leadership. These speakers consider themselves natives of the island, and in response to the term *Yankee*, they either include themselves in, or make fun of the whole idea.

In the youngest age level, the Portuguese descent group shows a very regular use of centralization, whether second or third or fourth generation, and their average centralization index in the table is, at this point, higher than the English group.

One might think that centralization might be on the way to becoming a marker of the ethnic Portuguese on the island, if such a trend continues. But this possibility runs counter to the strongly democratic nature of present-day Vineyard society. Among high school students, for example, there appear to be no social barriers between the ethnic groups, in clubs, at dances, and between friends. This situation is especially shocking to some former mainlanders, who would like to draw a color line against some of the children with Cape Verde backgrounds. But despite a few such counter-currents, the unifying, protective nature of Vineyard society shields the island native from the kind of reality which is practised on the outside.⁵¹

The reason that the youngest Portuguese group shows higher centralization is that a larger percentage identify themselves with the island and the island way of life, than is the case among the English descent group. Whereas almost all of the English group leave the island to go to college, and few return, almost all of the Portuguese group remain. As a result, they are gradually supplanting the English group in the economic life of the island.

It is fair enough to say that the main problem of the Portuguese group has not been to resist the incursions of the summer people but rather to assert their status as native Vineyarders. Their chief obstacle has not been the outsiders, but rather the resistance to full recognition from the English descent group. With full participation in native status, has come full use of the special characteristics of Martha's Vineyard English, including centralized diphthongs.

The Indian descent group is relatively small and homogeneous. The hundred citizens of Gay Head are united in a few closely related families.

⁵¹ In several cases, Vineyard youngsters have received rather severe shocks on leaving the island for the armed services or for work in an area where caste restrictions were in force. One boy was put into a Negro regiment on entering the service, though action from Vineyard leaders had him transferred soon afterwards.

One would think that these survivors of the aboriginal Wampanoag Indians would have had little trouble in asserting their native status. On the contrary, a long tradition of denigration of the Indian has served, for over a hundred years, to rob him of the dignity which should accompany this feat of survival. The issue revolves around the fact that the declining Indian community has necessarily intermarried with outsiders over the past ten generations. The logic of American society dictated that these outsiders should be Negroes. Thus as early as 1764, the Yankee officials of the Vineyard claimed that only one quarter of the Indians were "of pure blood."⁵² In 1870, the Governor of Massachusetts took away the reservation status of Gay Head, on the ground that they really weren't Indians at all, and handed them over to the political ministrations of Chilmark.

For many decades, the Indians were literally second class citizens, and the resentment dating from this period is not entirely gone. On the other hand, we find that a number of Vineyarders, of both English and Portuguese descent, regard the Indians with a mixture of sarcasm and scepticism:

... show me a Gay Head Indian and I'll like to see one.

The Indian people are aware of this situation, as shown in this quotation from one of the Indian informants, a woman of 69:

These island folks, they don't want to mix at all, up this end. . . . They don't like to give the Indian his name, here on the island. I'll tell you that. They like to be dirty with some of their talk.

Despite the great shift in Vineyard ideology over the past three generations, the Indians still feel blocked, geographically and socially, by the Chilmarkers, "up this end." Their attitude toward the Chilmarkers is ambiguous: on the one hand, they resent the Chilmarkers' possessive attitude toward the island, and the traditional hard-fisted, stiff-necked Yankee line. Their reaction to the word *Yankee* is sarcastic and hostile.⁵³ But their main complaint is that they deserve equal status, and whether they will admit it or not, they would like to be just like the Chilmarkers in many ways. *h a*

As far as centralization is concerned, Table 5 indicates that the Indians follow close behind the Chilmarkers. At the same time, they show a greater relative increase of centralization of /au/, similar to the Portuguese development, especially among the young people. Here there are signs of an

⁵² A very rich vein of information on this score may be tapped from Richard L. Pease's *Report of the commissioner appointed to complete the examination . . . of all boundary lines . . . at Gay Head*. Boston: 1871. Pease was acting essentially as the hatchet man for the Governor of Massachusetts, to whom he was reporting.

⁵³ "Where they come from—down south somewhere? . . . Lot of 'em come from Jerusalem, you know . . ."

additional phonetic feature, shared by both Portuguese and Indians: a backed form of /au/, which may be written [AU]. It is characteristic of five speakers in the sample, all under 30, all fairly low in socio-economic status. Whether it represents a general trend cannot be determined at this point.

We may note that there has been a revival of Indian culture in the form of pageants staged for the tourist trade, beadwork and other Indian crafts, and with these a revived emphasis on tribal organization. The younger Indians acknowledge that this revival was commercially motivated in its beginnings, but they claim that it is now more than that, and that Indian culture would survive if the vacationers disappeared entirely. The Indian language has been dead for several generations, however, and the ritual formulas must be learned from a book. The Indians are truly traditional speakers of English, and their claim to native status must be expressed in that language.

11. The social meaning of centralization

From the information we now have at hand, there readily emerges the outline of a unifying pattern which expresses the social significance of the centralized diphthongs.

It is apparent that the immediate meaning of this phonetic feature is "Vineyarder." When a man says [rɛt] or [hɛus], he is unconsciously establishing the fact that he belongs to the island: that he is one of the natives to whom the island really belongs. In this respect, centralization is not different from any of the other sub-phonemic features of other regions which are noted for their local dialect. The problem is, why did this feature develop in such a complicated pattern on the Vineyard, and why is it becoming stronger in the younger age levels?

The answer appears to be that different groups have had to respond to different challenges to their native status. And in the past two generations, the challenges have become much sharper through severe economic and social pressures.

The old-family group of English descent has been subjected to pressure from the outside; its members are struggling to maintain their independent position in the face of a long-range decline in the economy and the steady encroachment of the summer people. The member of the tradition-oriented community naturally looks to past generations for his values: these past generations form a reference group for him.⁵⁴ The great figures of the past are continually referred to, and those who have died only a few years ago have already assumed heroic stature. "If you could only have

⁵⁴ In the technical sense developed by R. Merton, *Social Theory and Social Structure*. Glencoe, Ill.: 1957.

been here a few years ago and talked to N. He could have told you so many things!"

The sudden increase in centralization began among the Chilmark fishermen, the most close-knit group on the island, the most independent, the group which is most stubbornly opposed to the incursions of the summer people. There is an inherently dramatic character to the fisherman's situation, and a great capacity for self-dramatization in the fisherman himself, which makes him an ideal candidate to initiate new styles in speech. In the early morning, the curtain rises: a solitary figure appears upon the scene. For the course of an entire day, this single actor holds the stage. Then at last, the boat docks; the curtain descends. The play is over, yet the reviews will be read and re-read for generations to come.

I can remember as a boy, when I first started going to sea with my father, he said to me: remember two things. Always treat the ocean with respect, and remember you only have to make one mistake, never to come back.

Centralized speech forms are then a part of the dramatized island character which the Chilmarker assumes, in which he imitates a similar but weaker tendency in the older generation.

For younger members of the English descent group, we can view the mechanism in greater detail. For them, the old timers and the up-islanders in particular serve as a reference group. They recognize that the Chilmark fishermen are independent, skillful with many kinds of tools and equipment, quick-spoken, courageous and physically strong. Most importantly, they carry with them the ever-present conviction that the island belongs to them. If someone intends to stay on the island, this model will be ever present to his mind. If he intends to leave, he will adopt a mainland reference group, and the influence of the old-timers will be considerably less. The differential effect in the degree of centralization used is a direct result of this opposition of values.

The Portuguese group is not faced with a dilemma of going or staying. The main challenge to which this group has responded is from the English group, which has certainly served as a reference group for the Portuguese until very recent times. As the number of Portuguese in prominent positions grows, it is no longer urgent to minimize the effects of being Portuguese, but rather to assert one's identity as an islander.

The Gay Head developments are dictated by the antinomy of values which reigns there. On the one hand, the Indian group resents any bar to full participation in the island life, and the Indians have plainly adopted many of the same values as the Chilmarkers. But on the other hand, they would like to insist as well on their Indian identity. Unfortunately, they no

longer have linguistic resources for this purpose, and whether they like it or not, they will follow the Chilmark lead.

The role of the Chilmarker, or "old-time typical Yankee" has declined as the reference group which governs the meaning of "islander" has shifted away from that which governs "Yankee." Even among the Chilmarkers, the more far-sighted members of the community recognize that the term *Yankee* no longer fits the island. Whereas this word may still be a rallying cry in some parts of New England, it has outlived its usefulness on Martha's Vineyard. In emphasizing descent status rather than native status, *Yankee* summons up invidious distinctions which are no longer good currency on the island.

People don't make so much about it as they used to when I was young. People would make that statement: "I'm a Yankee! I'm a Yankee!" But now you very seldom—mostly, read it in print.⁵⁵

In summary, we can then say that the meaning of centralization, judging from the context in which it occurs, is *positive orientation towards Martha's Vineyard*. If we now overlook age level, occupation, ethnic group, geography, and study the relationship of centralization to this one independent variable, we can confirm or reject this conclusion. An examination of the total interview for each informant allows us to place him in one of three categories: *positive*—expresses definitely positive feelings towards Martha's Vineyard; *neutral*—expresses neither positive nor negative feelings towards Martha's Vineyard; *negative*—indicates desire to live elsewhere. When these three groups are rated for mean centralization indexes, we obtain the striking result of Table 6.

TABLE 6. CENTRALIZATION AND ORIENTATION TOWARDS MARTHA'S VINEYARD

Persons		CI /ai/	CI /au/
40	Positive	0.63	0.62
19	Neutral	0.32	0.42
6	Negative	0.09	0.08

The fact that this table shows us the sharpest example of stratification we have yet seen, indicates that we have come reasonably close to a valid explanation of the social distribution of centralized diphthongs.

12. The intersection of social and linguistic structures

The following abstract scheme may serve to summarize the argument which has been advanced so far to explain the spread and propagation of this particular linguistic change.

⁵⁵ The speaker is one of the Mayhews, a retired Chilmark fisherman, who has as much claim to be a "typical old Yankee" as any person on Martha's Vineyard.

1. A language feature used by a group A is marked by contrast with another standard dialect.
2. Group A is adopted as a reference group by group B, and the feature is adopted and exaggerated as a sign of social identity in response to pressure from outside forces.
3. Hypercorrection under increased pressure, in combination with the force of structural symmetry, leads to a generalization of the feature in other linguistic units of group B.
4. A new norm is established as the process of generalization levels off.
5. The new norm is adopted by neighboring and succeeding groups for whom group B serves as a reference group.

There remains a gap in the logic of the explanation: in what way do social pressures and social attitudes come to bear upon linguistic structures? So far we have assembled a convincing series of correlations: yet we still need to propose a rational mechanism by which the deep-seated elements of structure enter such correlations.

It has been noted that centralized diphthongs are not salient in the consciousness of Vineyard speakers. They can hardly therefore be the direct objects of social affect. The key to the problem may lie in the fact that centralization is only one of many phonological features which show the same general distribution, though none may be as striking or as well stratified as /ai/ and /au/. There are no less than fourteen phonological variables which follow the general rule that the higher, or more constricted variants are characteristic of the up-island, "native" speakers, while the lower, more open variants are characteristic of down-island speakers under mainland influence.⁵⁶ We can reasonably assume that this "close-mouthed" articulatory style is the object of social affect. It may well be that social evaluation interacts with linguistic structures at this point, through the constriction of several dimensions of phonological space. Particular linguistic variables would then be variously affected by the overall tendency towards a favored articulatory posture, under the influence of the social forces which we have been studying. Evidence for such an hypothesis must come from the study of many comparable developments, in a variety of English dialects and other languages. It is enough to note here that it is a

⁵⁶ In the following list of the variables in question, the up-island form is given first. PHONEMIC INVENTORY: /o/~/ou/ in *road, toad, boat, whole* . . . PHONEMIC DISTRIBUTION: /e/ only before intersyllabic /r/ instead of both /e/ and /æ/; /r/~/ə/ in tautosyllabic position. PHONEMIC INCIDENCE: /ɪ~/e/ in *get, forget, when, anyway, can* . . .; /ε~/æ/ in *have, had, that*; /ʌ~/ɑ/ in *got*. PHONETIC REALIZATION: [ɪr~/aɪ] and [εu~/aʊ]; [r~/ə/]; [ɪr~/ɛr] in *work, person* . . .; [ə~/ʌ] in *furrow, hurry* . . .; [oʊ~/ou] in *go, no* . . .; [ii~/ii] and [uu~/uu]; [ɪə~/i] and [eə~/ε].

plausible mechanism for socio-linguistic interaction which is compatible with the evidence which has been gathered in this investigation.

13. Limitations of this study

We noted earlier that one limitation of this study stems from the fact that the variable selected is not salient. This limitation, coupled with the small size of the Vineyard population, made it impractical to explore thoroughly the subjective response of native speakers to centralized diphthongs. Other shortcomings of the technique used on Martha's Vineyard may be seen in the sampling method, which was far from rigorous.⁵⁷ The statements made about developments through various age levels among the Portuguese and Indians are based on an inadequate number of cases. The sample is particularly weak in the down-island area, especially in Oak Bluffs, and the picture of down-island trends is correspondingly weaker than up-island developments. Finally, it may be noted that the interviewing technique was not as firmly controlled as it might have been: a number of changes in the interview structure were made as the study progressed.

With these reservations, we can say that the findings give good confirmation of the main theme of the study: the correlation of social patterns with the distributional pattern of one linguistic variable.⁵⁸ The reliability of the index used was tested in several cases where the same informant was interviewed twice, with good results.⁵⁹ Indexes for reading style did not diverge sharply from other portions of the interview. The validity of the scale of measurement was well established by instrumental methods, and the validity of the whole seems to be reinforced by the unitary nature of the final interpretation.

The techniques developed on Martha's Vineyard are presently being refined and applied to a much more complex situation in the urban core of

⁵⁷ The problem of sampling technique for linguistic variables is a difficult one at the moment. While we are sure that linguistic behavior is more general than the behavior usually traced by survey methods, we do not know how much more general it is, nor can we estimate easily now far we may relax the sampling requirements, if at all.

⁵⁸ In addition to the positive correlations discussed above, the explanation given is reinforced by certain negative results of alternate explanations. The educational level of the informants is not correlated significantly with degree of centralization. The distribution of sub-standard or archaic grammar does not correspond to the distribution of centralized forms.

⁵⁹ For example, two interviews with Ernest Mayhew, Chilmark fisherman, age 83, showed these results: first interview, CI /ai/ 0.67, CI /au/ 0.58; second interview, CI /ai/ 0.59, CI /au/ 0.40. The count for /au/ is based on about one-third as many items as for /ai/.

New York City. Here multiple-style speakers are the rule, not the exception; instead of three ethnic groups we have a great many; mobility and change are far more rapid; and the population is huge. Here the sampling requirements must be far more rigid; and the techniques used to assess the social meaning of linguistic cues must be more subtle and complex. Yet the basic approach, of isolating the socially significant variables, and correlating them with the patterns of general social forces, is the same as that which has been used on Martha's Vineyard. It is hoped that such methods will give us further insight into the mechanism of linguistic change.

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