American Dialects at College

by

Jeremy C. Doernberger

Professor Nathan Sanders, Advisor

A thesis submitted in partial fulfillment
of the requirements for the
Degree of Bachelor of Arts with Honors
in Linguistics

Williams College

Willliamstown, Massachusetts

May 2008

Table of Contents

Abstract

This study investigates the changes to the vowel systems of ten first-year college students from three different dialect regions of the United States: Northern California ($n = 3$), the Northern Cities ($n = 3$), and the South ($n = 4$). The speakers were interviewed three times over the year: once early in the first semester, to establish their baseline vowel systems; once again approximately two months later, before they had returned to their home dialect region; and once again after they had been home and then returned to college. It was found that speakers made significant changes within the first two months of their arrival at college. The degree of these changes depended on social awareness of the dialect. Thus, Northern Californians made no significant changes to regional features, Northern Cities speakers made varied changes, and Southerners made significant in the regional characteristics of their vowels.

Acknowledgements

I would like to thank my thesis and major advisor, Professor Nathan Sanders, without whose help I would not have been able to complete this thesis. Professor Tara SanchezI would also like to thank Professor Steven Fein, whose introductory course to psychological statistics and subsequent help made all of the statistics possible. Finally, thanks to my friends and family, who made me go to the library despite my protests.

Chapter 1
Introduction

1.1 The College Sociolinguistic Environment

It is a generally accepted fact that when first-year college students leave their home dialect region to attend school, they alter their speech. Many colleges in the United States draw their student body from all over the country, creating an environment in which there are thousands of speakers of dozens of dialects coming into contact with one another. Though folk-linguistics suggests that changes occur to dialects, this phenomenon has not been empirically studied. There are countless folk-linguistic accounts of Southerners leaving home for the first time to attend college in the North, and returning home months or even weeks later with profoundly changed dialects. What is not confirmed in such accounts is to what extent these changes occur, and whether other less-recognizable dialects undergo similar changes.

Williams College is a small school but is remarkably diverse in the geographical make-up of the student body, making it an ideal location to study how dialects from around the United States change when speakers of those dialects attend college. The school is sufficiently isolated from the surrounding community to reduce the possible influence of the local dialect on the speech of the student body. Forty-one states in all are represented in the class of 2011, encompassing every major dialect region of North America. The top five states represented in the class are from as many as seven different dialect regions (Inland North, Mid-Atlantic, the West/California, and the four regions of New England) as defined by the Atlas of North American English (ANAE; Labov, Ash, & Boberg 2006). This creates a mixture of American dialects that does not allow a clearly dominant majority dialect to establish itself as a prestige form.

Williams' housing situation focuses the dialectal environment that first-years encounter at college. Because Williams is strictly a residential college, every first-year student

lives on campus with a group of students known as an entry. The entry system is designed to have each entry be a microcosm of the first-year class, with students of different geographical and socioeconomic backgrounds living with one another throughout their first year. The entry invariably is the first cohesive peer-group that first-years associate with at the college. This makes it very difficult for students from similar dialect regions to segregate themselves from the rest of their class, which could foster their maintenance of their home dialect through constant reinforcement of dialectal features.

There are a large number of colleges like Williams across the country, with geographically diverse student bodies that are relatively isolated from the surrounding community. The number of students going to college has been increasing steadily for decades, and is predicted to continue to increase (NCES 2004). This means that more and more students encounter the type of situation presented by Williams: they are living outside of their home dialect regions for the first time in their lives, and there is no clear prestige form to adopt. The question of what happens to these students' regional dialects is thus one that is applicable to more and more students not only at Williams, but at a growing number of colleges and universities across North America.

1.2 Dialects in Contact

When languages and dialects come into contact with one another, research has confirmed that they will induce changes in one another. The most widely studied changes produced by contact are pidgins and creoles, which are the result of two or more unintelligible languages coming into contact with one another. Closely related to creoles are koinés, which are the hybrids that result when two or more mutually intelligible dialects come into contact with one another. Koinés are much more applicable to the college linguistic environment than are pidgins or creoles, because the dialects in question are invariably intelligible. Koinéization as described by Peter Trudgill (1986) involves several processes, including two known as dialect diffusion and dialect leveling (Britain 2002).

Diffusion occurs when a linguistic form spreads beyond its original location and entrenches itself in another sociogeographical place. It is often marked by the use of interdialect forms, which include phonetically intermediate forms and hypercorrections. Leveling involves the loss of marked (stigmatized) or minority forms in situations in which dialects are in contact. Should change occur at college, this seems to be a logical path for speakers to follow as they lose their regional characteristics. However, all of these changes are generally agreed to occur on a relatively long time scale, dealing with multiple genera-

tions of speakers. Thus, though college involves contact between regional dialects, theories on short-term change need to be considered as well.

1.3 Short-Term Language Change

Short-term intraspeaker variation is usually explained as the result of style-shifting, either due to increasing attention paid to speech (Labov 1972), or to accommodate to a speaker's audience (Bell 1984). Labov's theory of style-shifting is always described with regard to differences between speech of different socioeconomic classes. The speech of lower socioeconomic classes is often characterized by sociolinguistic markers that have attained a level of social awareness and are generally stigmatized. When speakers whose speech is characterized by these markers become aware of a prestige form that is not socially marked, they begin the process of adapting the prestige form. The adaptation of the prestige is led by women, who begin the process of adopting prestige variants before men.

Labov's style-shifting paradigm can, in theory, be easily applied to regional dialects—there are undoubtedly certain accents that are stigmatized and viewed as incorrect English, such as the Southern dialect (Preston 2002, 2005), and there are also clearly regional prestige dialects (such as those spoken in certain parts of New England, the Midland, and the West). The regional features of these stigmatized dialects are similar to stigmatized markers of lower socioeconomic classes' speech, and it seems logical to extend Labov's socioeconomic paradigm to regional patterns. The problem with this analysis in the college setting is that unlike in cases of socioeconomic variation, there is not a clear or unique prestige form to which speakers of stigmatized regional dialects can accommodate. Furthermore, there is no way to guarantee that all speakers who undergo change are aware that they speak a stigmatized dialect, or that a 'better' form exists.

Bell's theory of audience design defines short term intraspeaker variation as accommodation to different audiences. Attempting to adapt to different audiences who may be listening, speakers accommodate to what they know about those listeners' speech systems. The amount that a speaker accommodates is also dependent on the level of involvement of the listeners; an addressee will have more influence on a speaker's speech style than an auditor or overhearer, who may be listening to the conversation but are not directly involved.

Audience design theory is also insufficient in this case to predict changes that may occur to first-year speakers' speech. It seems that the only reasonable application of this theory would be in describing how an audience is vastly different at college than in a speaker's home dialect region. While at college, though, within the limiting confines of this study, the audience of each interview is always the same: the same interviewer conducts each inter-

view, using the same recording equipment in nearly identical rooms, and in each interview the speakers are aware of the intended use of the recording. Furthermore, the speakers' audience at Williams College in general does not change over their first-year, thanks largely to the entry system which establishes and maintains the same peer group for most students. The 'microcosm' of the Williams student body that surrounds every first-year is likely to be representative of the general composition of the students that will be around first-years for the rest of their time at Williams. Thus, should speakers show any type of change over the course of their first-year during these interviews, it could not be accounted for solely by audience design theory, because their audience is constant.

1.4 The Dialects in Question

This study focuses on three dialect regions of the United States: Northern California, the Northern Cities, and the South.

1.4.1 Northern California

Northern California is the only of the three dialect regions that is not defined by ANAE. The dialect is characterized by a vowel chain shift whose exact geographic domain has yet to be specified, but is certainly present in the area of Northern California around the San Francisco Bay (see Figure 1.1). The shift is a newly discovered phenomenon, first noted in the area in the early 1990s (Moonwomon 1992, Eckert in press).

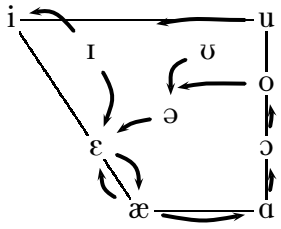

Figure 1.1: The Northern California Vowel Shift

The Northern California vowel shift involves a general counter-clockwise rotation of front vowels as well as fronting of the back vowels /u/, /o/, and /ʊ/. The rotation involves the lowering of /ɪ/ in most phonetic environments toward [ɛ], the lowering of /ɛ/ toward [æ], the backing and lowering of /æ/ toward [ɑ], and a low back merger of /ɑ/ and /ɔ/, pronounced somewhere between the two vowels. The general counter-clockwise rotation of front vowels is slightly more complicated when dealing with /ɪ/, which in fact undergoes

a split depending on the following phonetic environment. Before /ŋ/, /ɪ/ is pronounced closer to [i], whereas in other environments it lowers to a sound more like [ɛ]. The two features of this shift examined here are /u/ fronting and /ɪ/ lowering.[1]

1.4.2 The Northern Cities

The Northern Cities (a.k.a 'Inland North' in ANAE) is a major dialect region in the northern United States that is centered around the Great Lakes. It spans from upstate New York in the east to Minnesota, Iowa, and Wisconsin in the west, and from Michigan and Wisconsin in the north to northern parts of Ohio, Indiana, and Illinois in the south. The Northern Cities also reaches south to include speakers from cities between Chicago and St. Louis, Missouri, along what is known as the St. Louis Corridor: cities along Interstate 55, which all show evidence of the Northern Cities dialect (Labov 2007).

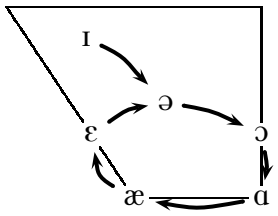

Figure 1.2: The Northern Cities Shift

The Northern Cities are characterized by a vowel chain shift called the Northern Cities Shift (see Figure 1.2), as well as their geographical location north of what is known as the 'on' line — above this line, the word *on* is pronounced as [ɑn], whereas south of the line *on* is pronounced as [ɔn]. But while the 'on' line distinction extends to other northern parts of the country, the Northern Cities Shift is geographically limited to the Northern Cities. This shift occurs in several stages, the first two of which are investigated herein. The first stage of the shift involves the raising and fronting of /æ/ to a position around Standard American English (SAE) /ɛ/ or /e/, in some cases to a high diphthong like [ɪe]. The second stage brings /ɑ/ to a fronter place of articulation, near that which has been vacated following the raising of /æ/. The following stages of the chain shift, though not investigated here, are as follows: /ɔ/ lowers and fronts slightly to the position in the vowel space vacated by /ɑ/; /ɛ/ is pushed lower and further back in the vowel space by the raising and fronting of /æ/ to around the position of /ə/; /ə/ is backed to a position behind /ɑ/; and in the final observed stage of the shift, /ɪ/ is lowered and centralized toward the SAE pronunciation of [ə]. In the

[1] The other part of the split, the raising of /ɪ/ toward [i], is not investigated here because of a lack of tokens in the appropriate phonetic environment.

vast majority of the Northern Cities, this shift adheres strictly to these stages — thus, if a speaker shows evidence of /ɛ/ backing, it is almost certain that same speaker has all of the stages in the shift preceding it.

1.4.3 The South

The South is the third and final dialect region investigated here, and was also exhaustively described by ANAE. It is a dialect region that extends from Virginia, West Virginia, Kentucky, and southern Missouri in the north down to the Gulf Coast (excluding Florida), and from Texas and Oklahoma in the west to the Atlantic Ocean in the east, with some notable exceptions of cities along the Atlantic Coast (Charleston, South Carolina, is not in the South, for instance). The South is also within an area described in ANAE as the Southeast Super Region (SESR), an area which includes the South, the Midland (the dialect region encompassing all of the area between the South and the Northern Cities, including Philadelphia but excluding western Pennsylvania), and possibly Florida, though the inclusion of Florida in the SESR has recently been called into question (Doernberger and Cerny 2007).

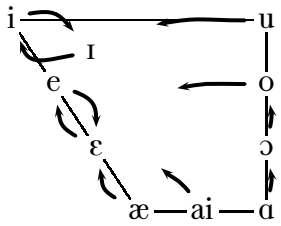

Figure 1.3: The Southern Shift

There are many dialectal features of the South that can be used to distinguish it from other areas of the country, and it is unnecessary to describe them all here. One of the most salient features of the South is the Southern Shift, a chain shift affecting front vowels (se Figure 1.3). This shift is triggered by /ai/ monophthongization, which causes the SAE diphthong to monophthongize into a vowel more like [aː] or [a]. Subsequent stages of the Southern Shift involve the reversal of /ɛ/ and /e/, the reversal of /ɪ/ and /i/, and monophthongization of /ɔi/ (as in *boil*) for those speakers with the most advanced stage of the Southern Shift.

It deserves mentioning that the triggering stage of the Southern Shift, /ai/ monophthongization, does not occur unconditionally for all speakers. There are only two areas of the South in which /ai/ is universally a monophthong: the Texas South region (a roughly triangular area with Dallas, Lubbock, and Odessa at its corners) and the Inland South (an area from the intersection of Ohio, West Virginia, and Kentucky in the north to Birmingham,

Alabama, in the south, including Knoxville and Chattanooga, Tennessee, and Ashville, North Carolina). In the rest of the South, /ai/ is a monophthong only word-finally and preceding voiced obstruents, and monophthongal /ai/ in other environments is perceived as a stigmatized feature of working-class speech (Feagin 1979).

Two features of the South are investigated here: /ai/ monophthongization and /o/ fronting. Across the SESR, /o/ tends to be fronted as compared to SAE. Though this is a salient feature of Southern speech, it is not exclusively Southern (in addition to the SESR, it is also found in California, as noted above), and thus it will be interesting to see if it behaves differently from /ai/ monophthongization, a feature that is only found in the South.

Chapter 2
Methods

2.1 Participants

The subjects for this study were first-year students at Williams College and were solicited for participation via email during the first week of classes at Williams. Potential subjects were identified from a list of the class of 2011 that included students' hometowns, so that they could be divided into the geographic areas in question. Requests were first sent to first-year swimmers because they were expected to be more obliging to interview requests due to shared extracurricular interests with the author. Of eight potential swimming interviewees, five chose to participate. The primary criteria for selecting Northern Californians for this interview was their self-identification as being from 'NorCal', and their hometowns being in the general San Francisco Bay area. The vast majority of first-years from the Northern Cities were from Illinois ($n = 23$), with the second-most represented state being Ohio ($n = 9$). The potential pool of subjects from the South was mostly made up of Georgians ($n = 9$), Texans ($n = 10$), and Virginians ($n = 11$). A total of nine requests were sent to first-years from the South (out of a total of 49 Southern first-years), six to those from Northern California (out of a total of 15), and eight to those from the Northern Cities (out of a total of 47). The final group of subjects consisted of a total of four Southerners, three Northern Californians, and three first-years from the Northern Cities — all are Caucasian, between 18 and 19 years old at the time of the first interview. Their specific demographic information can be seen in Tables 2.1, 2.2, and 2.3.

[1] Age as of the first interview.

	Sex	Age[1]	Hometown
NorCal1	Male	18	St. Helena, CA
NorCal2	Female	18	Lafayette, CA
NorCal3	Female	18	Kentfield, CA

Table 2.1: Demographics of subjects from Northern California

	Sex	Age	Hometown
NCS1	Female	18	Chicago, IL
NCS2	Female	18	Toledo, OH
NCS3	Female	18	Cleveland Heights, OH

Table 2.2: Demographics of subjects from the Northern Cities

	Sex	Age	Hometown
South1	Female	18	Atlanta, GA
South2	Female	19	Atlanta, GA
South3	Male	18	Decatur, GA
South4	Male	18	Nashville, TN

Table 2.3: Demographics of subjects from the South

2.2 Interviews

Three rounds of interviews were conducted in this study, two during the first semester (before December break) and one in the beginning of the Spring semester. The first round of interviews took place between September 11–20, and were intended to represent a baseline of speakers' dialects before any changes began. The second round took place between November 3–12, timed to occur before the majority of subjects had returned home from college. The final round of interviews took place February 18–27, after all speakers had already been home at least once.

The interviews consisted of an informal question-and-answer session under the pretense of a sociology study. Speakers were asked questions about Williams College and about their homes, intended to elicit lengthy responses about both. All interviews were conducted in soundproof practice rooms in Bernhard Music Center, the music building on campus. This was intended to provide a consistently low amount of background noise on the recordings, though there were several interviews in which the adjacent rooms were occupied by musicians and there was faint music on the recordings. Otherwise, the rooms were

consistently quiet. Recordings were made onto a Marantz Model CDR300 CD Recorder with an audio-technica ATR25 stereo microphone. The CD was then transferred to PC using CDex v. 1.51, and the resulting WAV files were opened in Audacity v. 1.2.6, which was used to select tokens of target vowels to be removed for analysis.

2.3 Analysis

Vowels are analyzed using Praat v. 4.4.11 (Boersma and Weenink 1992/2007). Formant measurements are taken from 0.05 seconds after the start of voicing to 0.05 seconds before the end of voicing on monophthong vowels. For diphthongs, instantaneous measurements are taken at 0.05 seconds after the start of voicing and at 0.05 sec before the end of voicing. For the sake of convenience, diphthongs are defined only by the difference between the initial and ending measurement for the formants. The formants at the beginning of each diphthong are subtracted from the formant values at the end of each diphthong, which produces a number that describes the distance along each formant axis that the dipthong travels. Thus, this study is purely concerned with the distance adiphthong takes through the vowel space, rather than where it begins and ends in the vowel space.

Measurements of F1 and F2 for all three interviews are compared using a one-way ANOVA, to determine if there were significant differences between speakers' formants across the different interviews. Individual speakers are only compared to themselves, rather than normalizing the data and comparing entire dialect regions over the course of the interviews. A speaker is defined as having significantly changed their vowel if the difference between either F1 or F2 (or both) is statistically significant or marginally significant.

In the event of there being either significant ($p < 0.05$) or marginally significant ($p < 0.10$) ANOVA results, an LSD post-hoc test is run to determine where the difference lies. Post-hoc results are only reported in sections to which they are chronologically pertinent (that is, only post-hoc results pertaining to the difference between the first and second interview are presented in the second interview section). Because this method is used, all post-hoc results that are calculated for significant or marginally significant ANOVA results are reported, even if it is the case that no significant difference exists for the interview in question.

Chapter 3
Northern California

3.1 The First Interview

The two features of the Northern California Shift investigated here are /u/ fronting and the /ɪ/ split. The fronting of /u/ occurs in almost every phonetic environment, except preceding /l/ (as in *school*). In this interview, only NorCal1 and NorCal3 utter tokens with /u/ before /l/ in any of their tokens, and for both speakers, those tokens have lower F2s than for their pronunciations of /u/ in other environments, meaning the speakers pronounce /u/ father back in their vowel space when it appears before /l/ than otherwise, which is characteristic of Northern California (Table 3.1).[1]

	Mean F1 (Hz)		Mean F2 (Hz)	
	Before /l/	elsewhere	before /l/	elsewhere
NorCal1	542	435	1131	1720
NorCal3	487	501	970	1857

Table 3.1: Formants of /u/ based on following phonetic environment

Due to the relatively short interview times, there are few tokens of /ɪ/ immediately preceding /ŋ/. This small number of tokens mean that ANOVA results would not be meaningful, but for speakers NorCal1 ($n = 3$) and NorCal2 ($n = 3$) there are enough tokens before /ŋ/ to suggest the probable presence of a split (Table 3.2). The difference in formants for NorCal1 can be seen in Figures 3.1 and 3.2. As can be seen, though there is not a very large difference in F1, there is a noticeable difference between F2 depending on the following phonetic environment.

The difference for NorCal2 can be seen in Figures 3.3 and 3.4. Both NorCal1 and NorCal2 show differences in their F2 measurements, both of them pronouncing /ɪ/ at a

[1] It should be noted that the formants of tokens preceding /l/ are based on a very limited amount of data: $n = 2$ for NorCal1 and $n = 1$ for NorCal3.

	Mean F1 (Hz)		Mean F2 (Hz)	
	Before /ŋ/	Elsewhere	Before /ŋ/	Elsewhere
NorCal1	511	506	1978	1702
NorCal2	387	471	2223	1941

Table 3.2: Formants of /ɪ/ based on following phonetic environment

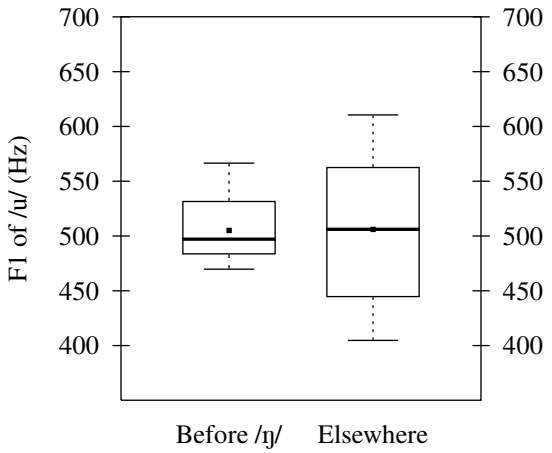

Figure 3.1: NorCal1's F1 of /ɪ/ based on following phonetic environment

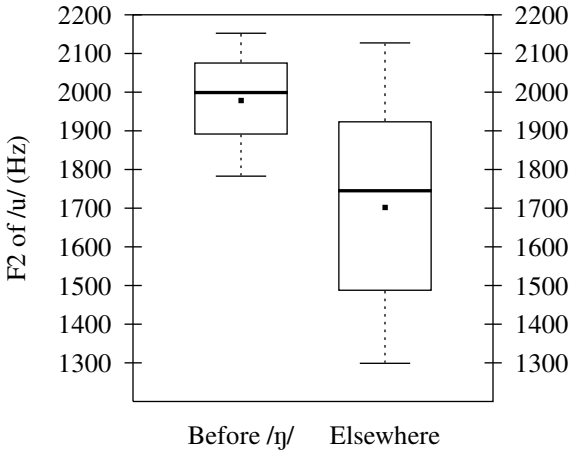

Figure 3.2: NorCal1's F2 of /ɪ/ based on following phonetic environment

fronter place of articulation before /ŋ/ as compared to other environments. NorCal2 also shows some difference in her F1 (of nearly 100 Hz), apparently pronouncing /ɪ/ at a higher place of articulation before /ŋ/. NorCal3 does not have any tokens appearing before /ŋ/ in the first interview.

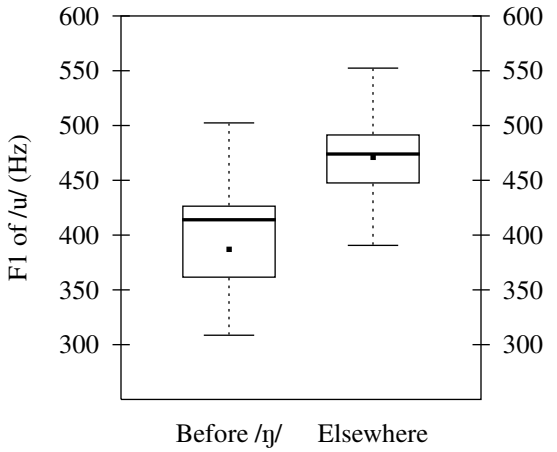

Figure 3.3: NorCal2's F1 of /ɪ/ based on following phonetic environment

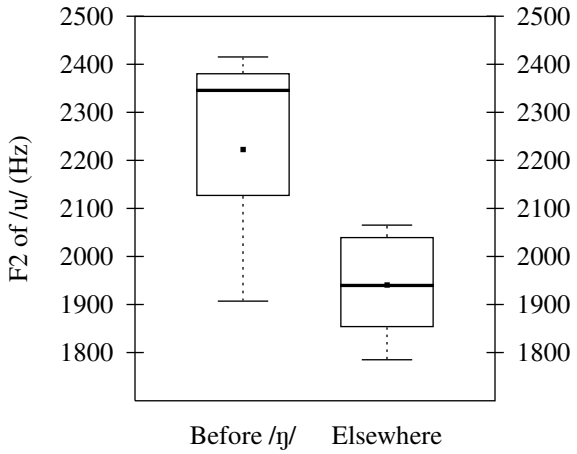

Figure 3.4: NorCal2's F2 of /ɪ/ based on following phonetic environment

Though both /u/ and /ɪ/ have two distinct pronunciations in the Northern California dialect depending on their phonetic environment, only one such environment for each vowel is present in sizable numbers in these data. Therefore, only one regional pronunciation of each vowel is investigated herein. Only the fronted /u/ is investigated, which is the variant that is specific to Northern California (the back pronunciation of /u/ preceding /l/ is the 'standard' pronunciation, spoken all over the United States outside of the West and

the South). Though both pronunciations of /ɪ/ are regionally unique, only the lowered version is analyzed, simply due to the limited number of tokens of /ɪ/ in the complimentary environment.

3.2 The Second Interview

3.2.1 /u/ Fronting

As was expected, there is no significant change in any pronunciations of /u/ in any of the Northern California speakers between the first and second interview. Both F1 and F2 are statistically indistinct, as evidenced in Table 3.3 and Table 3.4. No difference of speakers' average F1 was more than 87 Hz between the first two interviews, and the largest difference between average F2's for a speaker was only 104 Hz. A significant change in F2 would have been a clear indicator of change in the regional feature of this vowel, but it seems to be constant. NorCal1 has the greatest difference between means of both F1 and F2 of /u/ between the first and second interview, but despite this his results are not significant (Figures 3.5, 3.6).

	Mean F1 (in Hz) by Interview		Statistical Results	
	1	2	ANOVA	LSD Post-Hoc
NorCal1	435	431	$F(2,21) = 0.03$	—
			$p = 0.972$	
NorCal2	398	422	$F(2,13) = 0.62$	—
			$p = 0.554$	
NorCal3	490	403	$F(2,17) = 2.38$	—
			$p = 0.123$	

Table 3.3: Mean F1 of /u/ of Northern Californians

	Mean F2 (in Hz) by Interview		Statistical Results	
	1	2	ANOVA	LSD Post-Hoc
NorCal1	1720	1752	$F(2,21) = 1.92$	—
			$p = 0.171$	
NorCal2	1964	2002	$F(2,13) = 0.16$	—
			$p = 0.853$	
NorCal3	1839	1943	$F(2,17) = 0.19$	—
			$p = 0.832$	

Table 3.4: Mean F2 of /u/ of Northern Californians

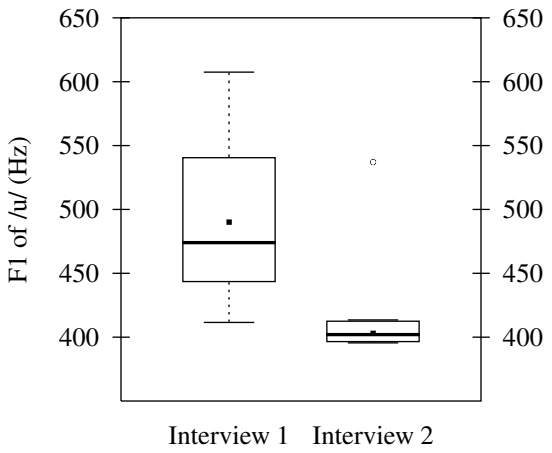

Figure 3.5: NorCal3's F1 of /u/ across two interviews

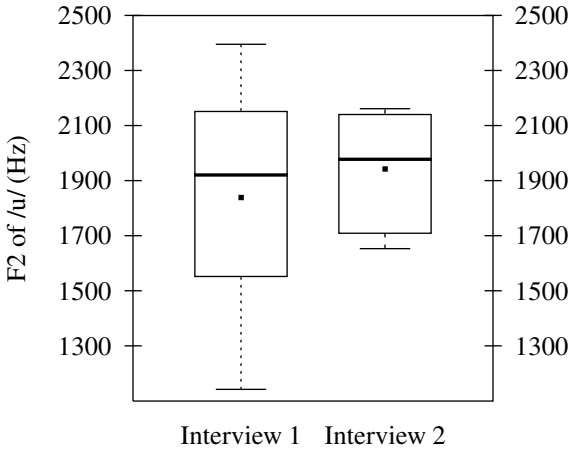

Figure 3.6: NorCal3's F2 of /u/ across two interviews

3.2.2 /ɪ/ Lowering

Just as in the case of /u/ fronting, there is no significant change to /ɪ/ in either of the first two interviews (Table 3.5, Table 3.6). Both F1 and F2 are statistically indistinct for every speaker when comparing the first two interviews. The differences between means are small for all of the Northern Californian speakers, as is the case with /u/ fronting: the largest change to F1 of /ɪ/ was only 34 Hz, which belonged to NorCal2, was not enough to be significant in this case (Figure 3.7). Any change in regional lowering would have presented itself as a change of F1, with a decrease in regionalism corresponding to a decrease in F1. The largest difference in the non-regionally marked formant of /ɪ/ is 117 Hz, belonging to NorCal3, though this too is not significant (Figure 3.8).

	Mean F1 (in Hz) by Interview		Statistical Results	
	1	2	ANOVA	LSD Post-Hoc
NorCal1	506	496	$F(2,38) = 0.43$	—
			$p = 0.650$	
NorCal2	471	505	$F(2,25) = 1.59$	—
			$p = 0.224$	
NorCal3	594	606	$F(2,31) = 0.09$	—
			$p = 0.912$	

Table 3.5: Mean F1 of /ɪ/ of Northern Californians

	Mean F2 (in Hz) by Interview		Statistical Results	
	1	2	ANOVA	LSD Post-Hoc
NorCal1	1702	1745	$F(2,38) = 0.20$	—
			$p = 0.824$	
NorCal2	1941	1805	$F(2,25) = 2.21$	—
			$p = 0.131$	
NorCal3	1895	1778	$F(2,31) = 0.81$	—
			$p = 0.456$	

Table 3.6: Mean F2 of /ɪ/ of Northern Californians

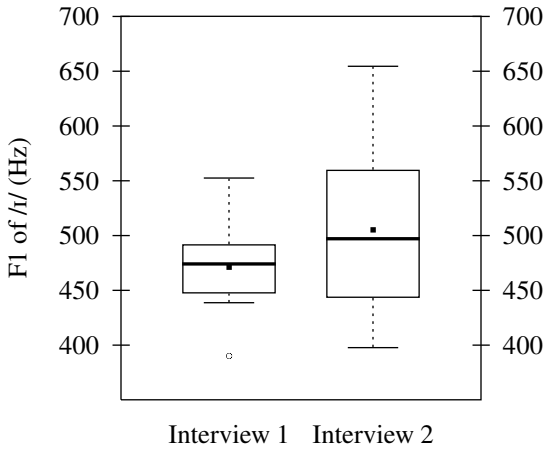

Figure 3.7: NorCal2's F1 of /ɪ/ (the regionally marked formant) across two interviews

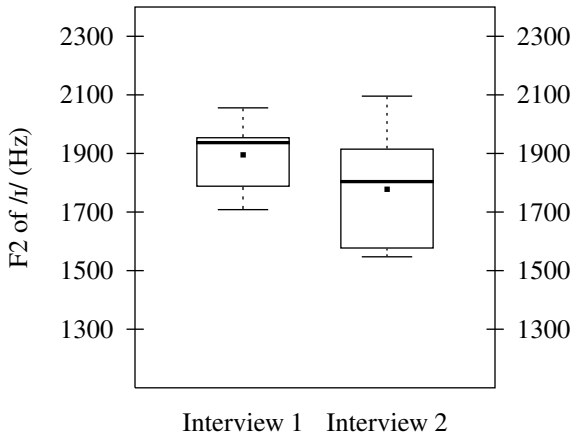

Figure 3.8: NorCal3's F2 of /ɪ/ across two interviews

3.3 The Third Interview

3.3.1 /u/ Fronting

As is the case with the first two interviews, there is no significant change between either the first or second interview and the third (Table 3.7, Table 3.8). As can be seen in the tables, NorCal3 has the most significant change in F1 ($p = 0.123$), but her differences of 22 Hz between the first and third interview and 65 Hz between the second and third are too small to prove any kind of statistical difference in F1. The lack of a significant difference in F1 is expected given that the height of /u/ is not regionally marked. The most significant change in F2 belongs to NorCal1 ($p = 0.171$), who also has relatively small differences between her average formants from the first (162 Hz) and second interview (130 Hz) as compared to the third.

	Mean F1 (in Hz) by Interview			Statistical Results	
	1	2	3	ANOVA	LSD Post-Hoc
NorCal1	435	431	434	$F(2,21) = 0.03$	—
				$p = 0.972$	
NorCal2	398	422	395	$F(2,13) = 0.62$	—
				$p = 0.554$	
NorCal3	490	403	468	$F(2,17) = 2.38$	—
				$p = 0.123$	

Table 3.7: Mean F1 of /u/ of Northern Californians

	Mean F2 (in Hz) by Interview			Statistical Results	
	1	2	3	ANOVA	LSD Post-Hoc
NorCal1	1720	1752	1882	$F(2,21) = 1.92$	—
				$p = 0.171$	
NorCal2	1964	2002	2050	$F(2,13) = 0.16$	—
				$p = 0.853$	
NorCal3	1839	1943	1921	$F(2,17) = 0.19$	—
				$p = 0.832$	

Table 3.8: Mean F2 of /u/ of Northern Californians

3.3.2 /ɪ/ Lowering

There is no significant difference in either formant of /ɪ/ in the third interview compared to those of either of the previous two interviews (Tables 3.9, 3.10). NorCal2 has the most significant difference between her average values of F1 in her first two interviews and her third, with a difference of 42 Hz between the first and the first and third interview, and a difference of only 8 Hz between the second and third interview. The largest difference of F2 between interviews is also that of NorCal2, with a difference of 92 Hz between the first and third interview, and a difference of 44 Hz between the second and third. None of these differences, of F1 or F2, was even marginally significant.

	Mean F1 (in Hz) by Interview			Statistical Results	
	1	2	3	ANOVA	LSD Post-Hoc
NorCal1	506	496	487	$F(2,38) = 0.44$	—
				$p = 0.650$	
NorCal2	471	505	513	$F(2,25) = 1.59$	—
				$p = 0.224$	
NorCal3	594	606	591	$F(2,31) = 0.09$	—
				$p = 0.912$	

Table 3.9: Mean F1 of /ɪ/ of Northern Californians

3.4 Discussion

It is clear that there is no significant change in the pronunciation of either /u/ or /ɪ/ among any of the Northern Californians in this study. The regional pronunciations of every speaker remains unchanged throughout speakers' first year at college, with /u/ keeping its fronted position and /ɪ/ remaining lowered (and presumably maintaining the full original split-system, though this could not be confirmed). There is little else to say about the Northern

	Mean F2 (in Hz) by Interview			Statistical Results	
	1	2	3	ANOVA	LSD Post-Hoc
NorCal1	1702	1745	1741	$F(2,38) = 0.20$	—
				$p = 0.824$	
NorCal2	1941	1805	1849	$F(2,25) = 2.21$	—
				$p = 0.131$	
NorCal3	1895	1778	1880	$F(2,31) = 0.81$	—
				$p = 0.456$	

Table 3.10: Mean F2 of /ɪ/ of Northern Californians

Californians — in short, they have a clearly regional pronunciation, but do not alter it in any significant manner over their first year at Williams.

Chapter 4
The Northern Cities

4.1 The First Interview

The two features of the Northern Cities Shift measured here are /æ/ raising and /ɑ/ fronting, the first two steps of the shift. Not all speakers exhibit the same levels of the chain shift in the first interview, with the strongest shift by far belonging to NCS1. She clearly has several stages of the Northern Cities Shift, including /æ/ raising, a smaller degree of /ɑ/ fronting, and large amount of /ɛ/ and /ə/ backing. It is interesting that she has a lesser degree of the second stage of the shift while she had fully backed /ɛ/ and /ə/, but this is not paramount to this study.

NCS1 stands in contrast to speaker NCS3, who shows no signs of the Northern Cities Shift in her initial interview. NCS3 in fact has a very standard vowel space, without any signs of /æ/ raising or /ɑ/ fronting, nor any other stages of the Northern Cities Shift. The only non-standard characteristics of her vowel space include some moderate /o/ fronting and possibly the presence of a low-back merger. While this is somewhat discouraging in that none of the typical traits of the Northern Cities are present, it may still be interesting to see if a speaker from a different region who does not display regional markers will change her speech in response to her new environment.

NCS2 has a vowel system somewhere between the obvious regionalism of NCS1 and the more standard system of NCS3. She shows evidence of some degree of /æ/ raising, and /ɑ/ is slightly fronted. However, she does not have any of the other characteristics of the Northern Cities Shift, otherwise having a fairly regular vowel space.

4.2 The Second Interview

4.2.1 /æ/ raising

Looking at F1 of /æ/, only NCS3 shows a significant change, reducing her F1 of /æ/ from an average of 966 Hz in the first interview to 836 Hz in the second (Table 4.1). This change is counter to that which was expected, because the the decrease in F1 means that /æ/ is raising in NCS3's vowel space, which is characteristic of further development of the Northern Cities Shift. NCS1 and NCS2 do not show any significant change in F1 between the first two interviews, neither of them altering their mean F1 more than 50 Hz. The difference between NCS3's F1 in the first two interviews can be seen in Figure 4.1.

	Mean F1 (in Hz) by Interview		Statistical Results	
	1	2	ANOVA	LSD Post-Hoc
NCS1	701	749	$F(2,33) = 1.02$	—
			$p = 0.371$	
NCS2	914	870	$F(2,21) = 0.75$	—
			$p = 0.485$	
NCS3	966	836	$F(2,22) = 3.77$	$*p = 0.014$
			$*p = 0.039$	

Table 4.1: Mean F1 of /æ/ for Northern Cities speakers

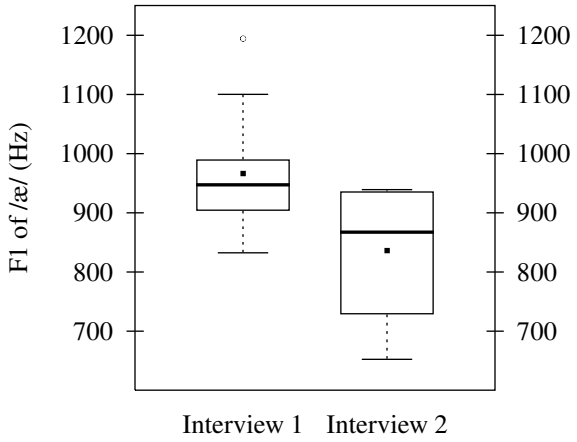

Figure 4.1: Speaker NCS3's F1 of /æ/ across the first two interviews

None of the Northern Cities speakers show a significant difference in frontness of /æ/ between the first and second interview, evidenced by the lack of any significant changes in F2 (Table 4.2). The largest difference between means is that of NCS1, whose average

F2 decreases from 1869 Hz in the first interview to 1748 Hz in the second. The regional feature most affecting /æ/ in the Northern Cities Shift is raising, which should primarily have an effect on F1. It is therefore not surprising that F2 does not change for any of the speakers, which would likely only be a side effect of raising /æ/ (any raised pronunciation would likely front to a small degree as well, following the contours of a speaker's vowel space).

	Mean F2 (in Hz) by Interview		Statistical Results	
	1	2	ANOVA	LSD Post-Hoc
NCS1	1869	1748	$F(2,33) = 1.65$	—
			$p = 0.207$	
NCS2	1881	1812	$F(2,21) = 0.85$	—
			$p = 0.441$	
NCS3	1645	1674	$F(2,22) = 0.16$	—
			$p = 0.855$	

Table 4.2: Mean F2 of /æ/ for Northern Cities speakers

4.2.2 /ɑ/ fronting

Only NCS2 shows any meaningful change in F1 of /ɑ/ between the first and second interview (Table 4.3), marginally reducing her F1 of /ɑ/ from a mean of 914 Hz to 870 Hz. Much like NCS3's change in the F1 of /æ/, this is actually an increase in the regional characteristics of /ɑ/. Though in theory the only change to /ɑ/ involves fronting, front vowels tend to be higher than back vowels, and the space vacated by /æ/ in the first stage of the Northern Cities Shift leaves available a slightly higher spot in the vowel space for fronting /ɑ/ to occupy. Thus, this marginally significant change to NCS2's /ɑ/ can be seen as an increase of her regional characteristics of /ɑ/.

	Mean F1 (in Hz) by Interview		Statistical Results	
	1	2	ANOVA	LSD Post-Hoc
NCS1	785	791	$F(2,12) = 3.20$	$p = 0.126$
			$p = 0.077$	
NCS2	907	996	$F(2,20) = 4.47$	$p = 0.090$
			$*p = 0.025$	
NCS3	975	894	$F(2,18) = 2.02$	—
			$p = 0.162$	

Table 4.3: Mean F1 of /ɑ/ for Northern Cities speakers

NCS2's marginally significant decrease in F1 is accompanied by a significant decrease in F2, from 1881 Hz in the first interview to 1812 Hz in the second (Table 4.4). This too is the opposite of what was expected, as it is also an increase in NCS2's regional pronunciation, though it is expected considering the observed change in F1. The difference between the interviews can be seen in Figure 4.2 (F1) and Figure 4.3 (F2). NCS1 and NCS3 do not show any significant differences in frontness of /ɑ/ between the first two interviews.

	Mean F2 (in Hz) by Interview		Statistical Results	
	1	2	ANOVA	LSD Post-Hoc
NCS1	1473	1314	$F(2,12) = 1.20$	—
			$p = 0.334$	
NCS2	1400	1642	$F(2,20) = 3.34$	$*p = 0.026$
			$p = 0.056$	
NCS3	1483	1379	$F(2,18) = 1.91$	—
			$p = 0.177$	

Table 4.4: Mean F2 of /ɑ/ for Northern Cities speakers

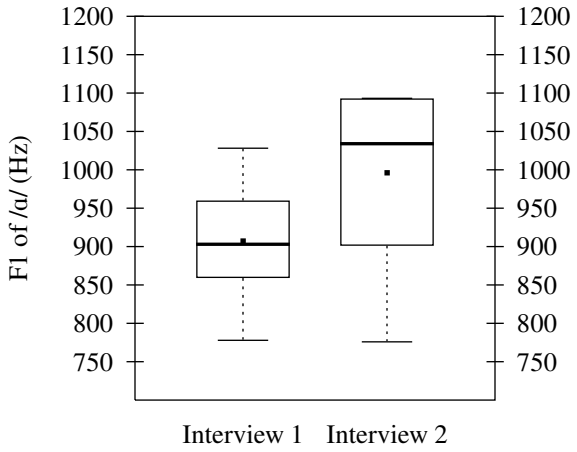

Figure 4.2: Speaker NCS2's F1 of /ɑ/ across the first two interviews

4.3 The Third Interview

4.3.1 /æ/ Raising

In the third interview, as in the first, NCS3 has a significant difference in F1 of /æ/, while NCS1 and NCS2 have no significant changes to their average pronunciation of /æ/ (Table 4.5). NCS3's mean F1 of /æ/ is 950 Hz in the third interview, which is much closer to

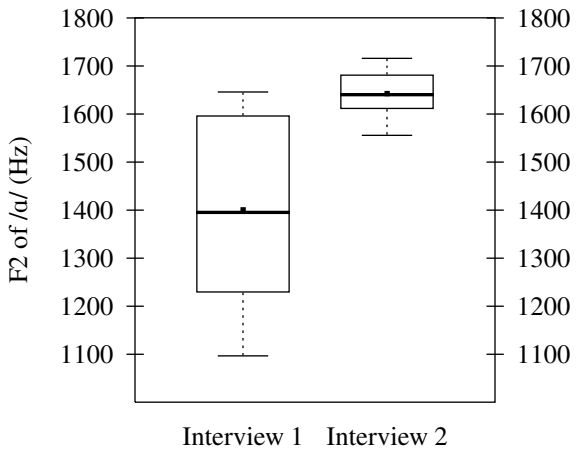

Figure 4.3: Speaker NCS2's F2 of /ɑ/ across the first two interviews

her average /æ/ in the first interview (966 Hz), as compared that of the second interview (836 Hz). Thus, NCS3 seems to have reverted her average /æ/ back to around the same lower position in her vowel space as when she first came to Williams, away from the more extreme version of the Northern Cities Shift she seems to have developed between the first and second interviews.

	Mean F1 (in Hz) by Interview			Statistical Results	
	1	2	3	ANOVA	LSD Post-Hoc
NCS1	701	749	718	$F(2,33) = 1.02$	—
				$p = 0.371$	
NCS2	914	870	834	$F(2,21) = 0.74$	—
				$p = 0.485$	
NCS3	966	836	950	$F(2,22) = 3.77$	$1 \rightarrow 3$ $p = 0.737$
				$*p = 0.039$	$2 \rightarrow 3, *p = 0.046$

Table 4.5: Mean F1 of /æ/ for Northern Cities speakers

As would be expected, there is once again no significant difference for any speaker's F2 of /æ/ in the third interview (Table 4.6). This likely occurs for the same reasons noted in the second interview, because the frontness of /æ/ is not altered at all by the dialect of the Northern Cities, other than as a residual effect of /æ/'s raising.

4.3.2 /ɑ/ Fronting

Speakers NCS1 and NCS2 pattern in a similar way in terms of F1 of /ɑ/ in the third interview, both of them significantly reducing their F1 (Table 4.7). NCS1 raises /ɑ/ from 791 Hz in the second interview to 709 Hz in the third, following almost no change between the first

	Mean F2 (in Hz) by Interview			Statistical Results	
	1	2	3	ANOVA	LSD Post-Hoc
NCS1	1869	1748	1757	$F(2,33) = 1.65$	—
				$p = 0.207$	
NCS2	1881	1812	1812	$F(2,21) = 0.85$	—
				$p = 0.441$	
NCS3	1645	1674	1678	$F(2,22) = 0.16$	—
				$p = 0.855$	

Table 4.6: Mean F2 of /æ/ for Northern Cities speakers

and second interviews. Her mean pronunciation of /ɑ/ in the third interview is both statistically distinct from that of the second interview and marginally distinct from her average /ɑ/ in the first interview. NCS2's average pronunciation of /ɑ/ is also significantly higher in her vowel space, evidenced by her significant reduction of F1 between the second and third interview, from an average of 995 Hz to 815 Hz. NCS3 shows no significant difference in F1 of /ɑ/ between any of the interviews.

	Mean F1 (in Hz) by Interview			Statistical Results	
	1	2	3	ANOVA	LSD Post-Hoc
NCS1	785	791	709	$F(2,12) = 3.19$	$1 \rightarrow 3, p = 0.073$
				$p = 0.077$	$2 \rightarrow 3, *p = 0.042$
NCS2	907	995	815	$F(2,20) = 4.46$	$1 \rightarrow 3, p = 0.101$
				$*p = 0.025$	$2 \rightarrow 3, *p = 0.007$
NCS3	975	894	972	$F(2,18) = 2.02$	—
				$p = 0.162$	

Table 4.7: Mean F1 of /ɑ/for Northern Cities speakers

NCS2 seems to revert her mean pronunciation of /ɑ/ in the third interview back to the same area of her vowel space as when she first arrived at Williams, evidenced by the significantly lower value of F2 in her third interview as compared to her second (Table 4.8). It deserves mentioning again that NCS2 exhibited marginally significant fronting of /ɑ/ between the first and second interviews. NCS1 and NCS3 do not show any evidence of significantly different frontness of /ɑ/ in the third interview compared to either of the previous two interviews.

	Mean F2 (in Hz) by Interview			Statistical Results	
	1	2	3	ANOVA	LSD Post-Hoc
NCS1	1473	1314	1348	$F(2,12) = 1.20$	—
				$p = 0.334$	
NCS2	1400	1642	1387	$F(2,20) = 3.34$	$1 \rightarrow 3, p = 0.901$
				$p = 0.056$	$2 \rightarrow 3, *p = 0.048$
NCS3	1483	1379	1504	$F(2,18) = 1.91$	—
				$p = 0.177$	

Table 4.8: Mean F2 of /ɑ/ for Northern Cities speakers

4.4 Discussion

Overall, the Northern Cities' speakers did not show any clear pattern in their changes. The changes they exhibited to the regional characteristics of their speech seemed more or less random and did not lead to any type of understanding as to whether the significant differences between interviews were significant in a larger sense, in relation to any kind of an overall Northern Cities pattern. NCS1, who in the first interview had multiple stages of the Northern Cities Shift, did not significantly change her regional pronunciation. The only significant difference between interviews was a raising of /ɑ/ from the second to the third interview. This change is not particularly compelling — though there is expected to be a small degree of raising if /ɑ/ moves into the position in the vowel space that /æ/ occupied previously, this should certainly appear with a significant difference in F2 to indicate a significant difference in frontness, which was not present.

NCS2 did not have any significant differences in her pronunciation of /æ/, which is the first stage of the shift, though her /ɑ/ was constantly moving around her vowel space. In the first interview, she seemed to have a low-back pronunciation of /ɑ/, which seemed to be around that which would be expected with a SAE vowel system; this was then shifted significantly forward (evidence for furthering of the Northern Cities Shift) and marginally significantly lower (which is not part of the Northern Cities Shift, and cannot be explained as a change in regional pronunciation). In the third interview, NCS2's /ɑ/ moved back to its original position in her vowel space.

NCS3, who in the first interview had no signs of the Northern Cities Shift, showed a significant raising of /æ/ in the second interview, which is the first stage of the Northern Cities Shift. This means that she had an increase in her regional pronunciation, which she lost in the third interview when she dropped her average /æ/ back down near the same position as in the first interview. None of these changes can be cohesively described as a single change that affected all speakers from the Northern Cities. Each speaker had their own separate changes to both /æ/ and /ɑ/ that seem totally disparate sporadic.

Chapter 5
The South

5.1 The First Interview

The two features of the Southern dialect investigated here are /o/ fronting and /ai/ monophthongization. The fronting of /o/ occurs in areas other than the South in the United States: it is actually a feature of the SESR, and is also part of the Californian Shift. Thus, this is not a strictly Southern feature, which may mean that it is not as stigmatized as features strictly relegated to the South, such as /ai/ monophthongization.

Monophthongization of /ai/ occurs in varying phonetic environments, depending on the degree of the Southern Shift. Given the hometowns of the speakers in this study, the ANAE would suggest that all speakers should show evidence of /ai/ monophthongization word-finally and before voiced consonants. Monophthongization before voiceless obstruents is not typically part of the Southern Shift outside of the Deep South, and thus is not likely to be present in the speech of these speakers.

Given that Southerners are not likely to be aware of this distinction, /ai/ is measured in all environments in which it appears, and the resulting tokens are separated into two groups: one which included all tokens of /ai/, and another which excluded tokens of /ai/ appearing before voiceless obstruents. Thus, two different versions of /ai/ can be compared to one another: those which began as regionally marked forms for speakers, and those which were 'more Southern' than speakers' original dialects.

5.2 The Second Interview

5.2.1 /o/ Fronting

As can be seen in Table 5.1, there is no significant change in F1 for any of the Southern speakers between the first and second interviews. The largest difference between means is

only 12 Hz, a negligible difference. This is an expected outcome, given that a change in vowel height would not have had any relation to regional speech patterns and would have been indicative of a change in the vowel system that was wholly different from a simple increase or decrease of regional pronunciation.

	Mean F1 (in Hz) by Interview		Statistical Results	
	1	2	ANOVA	LSD Post-Hoc
South1	601	602	$F(2,27) = 0.50$	—
			$p = 0.613$	
South2	626	622	$F(2,25) = 1.10$	—
			$p = = 0.349$	
South3	595	607	$F(2,23) = 0.05$	—
			$p = 0.956$	
South4	538	539	$F(2,12) = 0.32$	—
			$p = 0.735$	

Table 5.1: Mean F1 of /o/ of Southerners

There are significant changes in speakers' F2 (the regionally marked front/back measurement) between the first two interviews (Table 5.2). South1 significantly backs her pronunciation of /o/, evidenced by her decrease in F2. South2 also shows a backing of /o/, though her results are only marginally significant; she backs her average pronunciation of /o/ from an F2 of 1730 Hz in the first interview to 1583 Hz in the second. South1 and South2's change in F2 are shown in Figures 5.1 and 5.2, respectively. South3 and South4 do not show any significant change in their backness of /o/ between the first two interviews. Along with their stable F1, these results suggest that they do not alter their pronunciation of /o/ in any significant way over their first two months at Williams.

	Mean F2 (in Hz) by Interview		Statistical Results	
	1	2	ANOVA	LSD Post-Hoc
South1	1627	1411	$F(2,27) = 6.58$	$*p = 0.001$
			$*p = 0.005$	
South2	1730	1583	$F(2,25) = 4.20$	$p = 0.066$
			$*p = 0.027$	
South3	1423	1449	$F(2,23) = 1.23$	—
			$p = 0.312$	
South4	1312	1338	$F(2,12) = 0.15$	—
			$p = 0.863$	

Table 5.2: Mean F2 of /o/ of Southerners

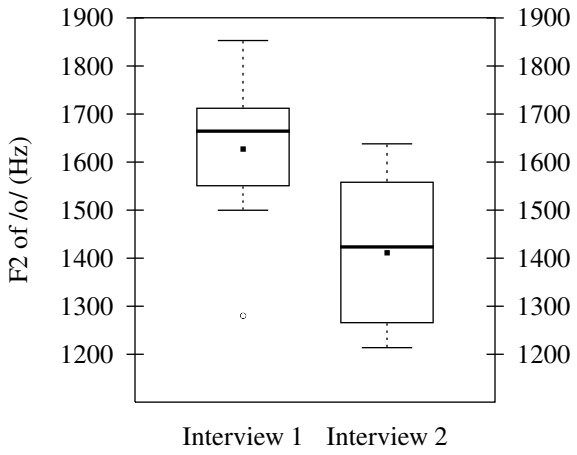

Figure 5.1: Difference between South1's average F2 of /o/ from the first to the second interview

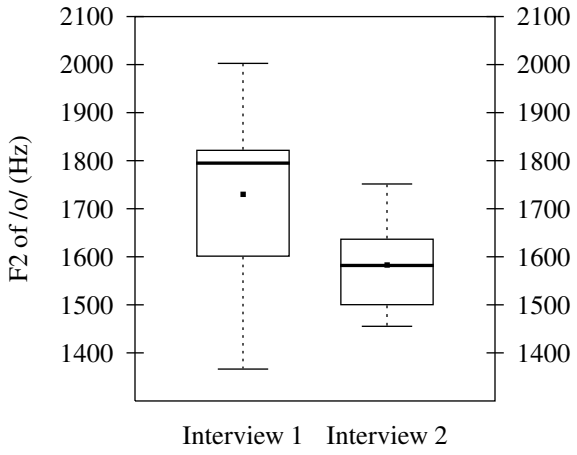

Figure 5.2: Difference between South2's average F2 of /o/ from the first to the second interview

5.2.2 /ai/ Monophthongization

Both female speakers show significant changes to the difference in F1 of /ai/ between the first two interviews: South1 increases her average difference from 65 Hz to 171 Hz, and South2 increases her difference from 70 Hz to 176 Hz (Table 5.3). This means that South1 and South2 nearly triple the vertical distance that /ai/ travels through their vowel space, an unmistakable case of diphthongization. The striking difference between interviews is evident in Figures 5.3 and 5.4. The Southern males, South3 and South4, do not show any significant difference in the first two interviews in their average height of /ai/.

When the above differences are compared to those tokens of /ai/ only in environments that are regionally marked in Speakers' home dialects, South1 no longer has a significant difference between the first and second interview. South2, however, has a greater differ-

	Mean ΔF1 (in Hz) by Interview		Statistical Results	
	1	2	ANOVA	LSD Post-Hoc
South1	65	171	$F(2,27) = 2.77$	$*p = 0.045$
			$p = 0.081$	
South2	70	176	$F(2,27) = 4.14$	$*p = 0.028$
			$*p = 0.027$	
South3	55	103	$F(2,33) = 0.82$	—
			$p = 0.451$	
South4	87	116	$F(2,25) = 1.18$	—
			$p = 0.324$	

Table 5.3: Southerners' mean difference in F1 of /ai/ in all environments

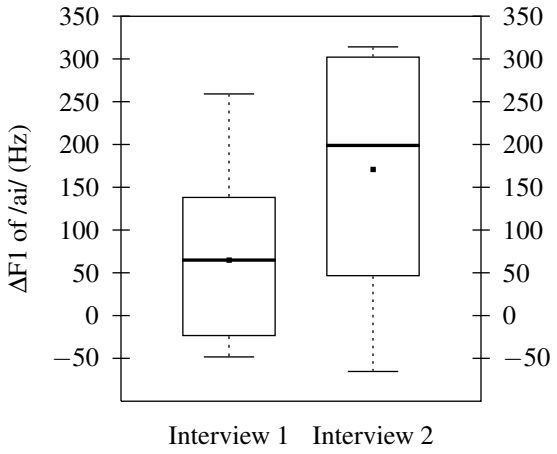

Figure 5.3: Difference from initial F1 of /ai/ to ending F1 of /ai/ for South1 in interviews one and two

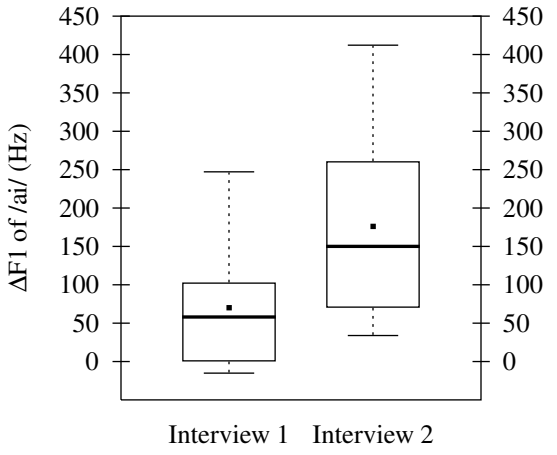

Figure 5.4: Difference from initial F1 of /ai/ to ending F1 of /ai/ for South2 in interviews one and two

ence between her average /ai/ height in the first interview (60 Hz) and that in her second (228 Hz) as than when looking at every token of /ai/. This means that South1 eliminates the 'most Southern' markers from her speech, while largely maintaining /ai/ as a monophthong in those phonetic environments in which it is a monophthong in her home dialect. South2 shows a different pattern, uniformly increasing the height of /ai/ in all environments, regardless of whether her home dialect has /ai/ as a monophthong or diphthong.

	Mean ΔF1 (in Hz) by Interview		Statistical Results	
	1	2	ANOVA	LSD Post-Hoc
South1	38	149	$F(2,15) = 1.30$	—
			$p = 0.302$	
South2	60	228	$F(2,17) = 4.69$	$*p = 0.011$
			$*p = 0.024$	
South3	54	127	$F(2,26) = 0.98$	—
			$p = 0.389$	
South4	89	88	$F(2,15) = 0.29$	—
			$p = 0.753$	

Table 5.4: Southerners' mean difference in F1 of /ai/ appearing word-finally and before voiced obstruents

Looking at F2, South1 and South4 show no significant evidence of change between their first two interviews. South2 and South3, however, significantly increase the difference between initial F2 and ending F2 of their tokens of /ai/, from 209 Hz to 353 Hz and from 147 Hz to 292 Hz, respectively (Table 5.5).[1] This means that in the second interview both speakers ended their /ai/ in a fronter position relative to the diphthong's nucleus than in the first interview (Figures 5.5 and 5.6). Like the changes in F1, this is indicative of an increase in diphthongization of /ai/, because /i/ has a place of articulation both fronter and higher than /a/.

When the tokens are restricted to only those that begin as regionally marked for these speakers (those word-finally and before voiced consonants), there are no significant changes between interviews for any of the Southern features (Table 5.6). This suggests that the majority of difference shown in South2 and South3's change in /ai/ in Table 5.5 does not result in actual diphthongization of speakers' regionally marked monophthongs, but rather in emphasized diphthongization of /ai/ in those environments that began as diphthongs for these speakers.

[1]The F2 values for /ai/ merit explanation. Because the usual path of /ai/ is from the back of the mouth to the front, this corresponds to a typical increase of F2 over the course of the vowel. Every positive value corresponds to this pronunciation of /ai/. The negative values, on the other hand, mean that a pronunciation of /ai/ actually moved through the vowel space from a relatively front nucleus to an off-glide somewhere further back in the vowel space.

	Mean ΔF1 (in Hz) by Interview		Statistical Results	
	1	2	ANOVA	LSD Post-Hoc
South1	140	301	$F(2,27) = 2.36$	—
			$p = 0.113$	
South2	209	353	$F(2,27) = 2.75$	$p = 0.055$
			$p = 0.082$	
South3	147	292	$F(2,33) = 2.60$	$*p = 0.035$
			$p = 0.089$	
South4	313	123	$F(2,25) = 1.65$	—
			$p = 0.213$	

Table 5.5: Southerners' mean difference in F2 of /ai/ in all environments

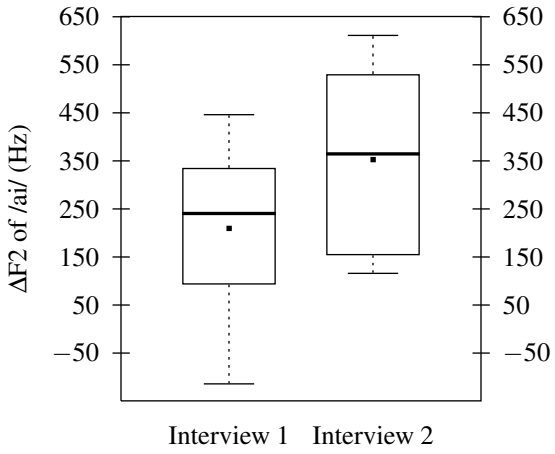

Figure 5.5: Difference from initial F2 of /ai/ to ending F2 of /ai/ for South2 in interviews one and two

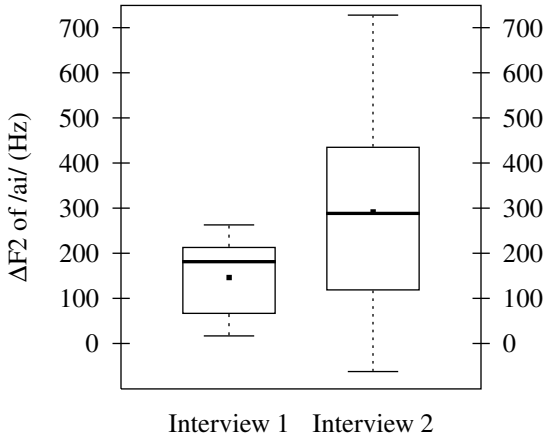

Figure 5.6: Difference from initial F2 of /ai/ to ending F2 of /ai/ for South3 in interviews one and two

	Mean ΔF1 (in Hz) by Interview		Statistical Results	
	1	2	ANOVA	LSD Post-Hoc
South1	121	160	$F(2,15) = 0.47$	—
			$p = 0.363$	
South2	220	355	$F(2,17) = 2.40$	—
			$p = 0.121$	
South3	161	267	$F(2,26) = 1.67$	—
			$p = 0.209$	
South4	162	108	$F(2,15) = 0.15$	—
			$p = 0.862$	

Table 5.6: Southerners' mean difference in F2 of /ai/ appearing word-finally and before voiced obstruents

From this data, we can make some basic statements about the changes that occur for Southern speakers between the first and second interviews. All three Southern speakers from Atlanta significantly change their pronunciation of /ai/, by increasing the change in at least one formant within their average token of /ai/. The majority of this change, however, does not come from reducing their own regional speech. Rather, the majority of the change comes from emphasized diphthongization of the more stigmatized varieties of /ai/: those that appear before before voiceless obstruents. This change suggests that these speakers are trying to dissociate themselves from the most stigmatized varieties of Southern English, while maintaining their more acceptable form of Southern English.

5.3 The Third Interview

5.3.1 /o/ Fronting

It remains the case in the third interview that there are no significant changes in F1 of /o/ for any Southern speakers (Table 5.7). Every speaker shows more variation between the second and third interview as compared to between the first and second, but this is irrelevant given that there are no significant results. Again, this is expected because height of /o/ is not regionally marked and is thus unlikely to change.

As can be seen in Table 5.8, there are significant changes to /o/'s F2 between previous interviews and the third interview for South1 and South2. South1 has a marginally significant difference between the second and third interview, actually increasing her mean F2 from 1411 Hz in the second interview to 1540 Hz in the third (Figure 5.7). Though only marginally significant, it seems that South1 has reverted to the speech pattern she had in

	Mean F1 (in Hz) by Interview			Statistical Results	
	1	2	3	ANOVA	LSD Post-Hoc
South1	601	602	620	$F(2,27) = 0.50$	—
				$p = 0.613$	
South2	626	622	672	$F(2,25) = 1.10$	—
				$p = 0.349$	
South3	595	607	608	$F(2,23) = 0.05$	—
				$p = 0.956$	
South4	538	539	579	$F(2,12) = 0.32$	—
				$p = 0.735$	

Table 5.7: Mean F1 of /o/ of Southerners

the first interview, with a regionally-marked fronted /o/ closer to that which she had when she came to Williams.

South2 showed a pattern that could be considered the opposite of South1 in the third interview (Figure 5.8). Her mean F2 of /o/ in the third interview is significantly lower than in her first ($p = 0.010$), but statistically indistinct from her second ($p = 0.463$). This means that the backer pronunciation of /o/, which she had already developed in her second interview, has remained roughly the same in her third interview, as opposed to the pattern shown by South1 of changing her pronunciation back to her fronted /o/.

	Mean F2 (in Hz) by Interview			Statistical Results	
	1	2	3	ANOVA	LSD Post-Hoc
South1	1627	1411	1540	$F(2,27) = 6.58$	$1 \rightarrow 3, p = 0.181$
				$*p = 0.005$	$2 \rightarrow 3, p = 0.062$
South2	1730	1583	1523	$F(2,25) = 4.20$	$1 \rightarrow 3, *p = 0.010$
				$*p = 0.027$	$2 \rightarrow 3, p = 0.463$
South3	1423	1449	1279	$F(2,23) = 1.23$	—
				$p = 0.312$	
South4	1312	1338	1247	$F(2,12) = 0.15$	—
				$p = 0.863$	

Table 5.8: Mean F2 of /o/ of Southerners, by interview

5.3.2 /ai/ Monophthongization

In the third interview, South1 and South2 have significant differences in F1 of /ai/ from their previous interviews, while South3 and South4 do not show any significant difference (Table 5.9). The changes in F1 of /ai/ for both South1 and South2 mimic those of F2 of /o/, as can be seen in Figures 5.9 and 5.10. South1's mean F1 of /ai/ is closer to that of her first

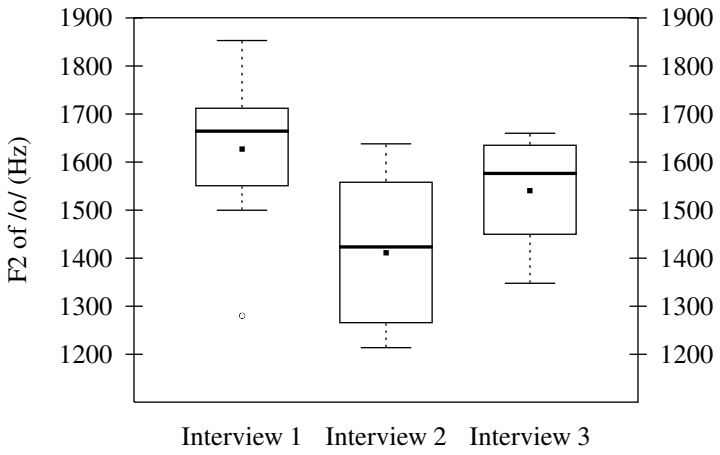

Figure 5.7: South1's F2 of /o/ across all three interviews

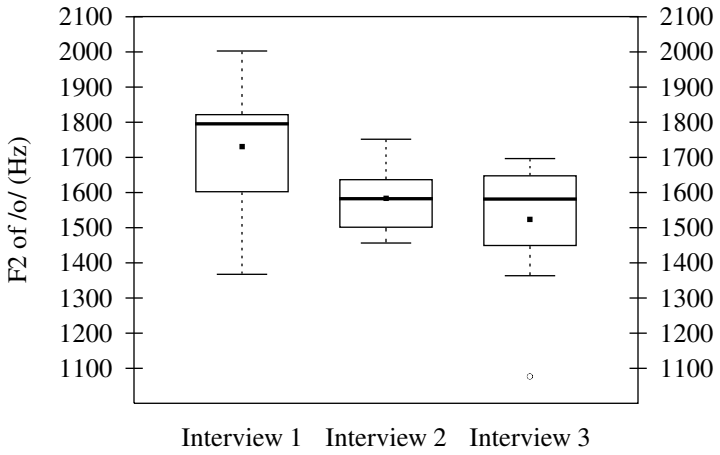

Figure 5.8: South2's F2 of /o/ across all three interviews

interview and significantly different from her second, while South2's mean F1 of /ai/ is very similar to that of her second interview and significantly different from her first.

When tokens of /ai/ are limited to those that were monophthongs in the speakers' home dialects, the results again become less robust (Table 5.10). South1 no longer has any significant change between the three interviews, though South2 maintains a marginally significant difference between her first interview and the two subsequent interviews. As with the differences between the first and second interviews, this suggests that the majority of change that occurrs is in tokens of /ai/ appearing before voiceless obstruents.

South2 is the only speaker to show any significant difference in her ΔF2 of /ai/ between the third interview and either of the previous two, with an ΔF2 significantly different in the third interview (181 Hz) as compared to the second (353 Hz; Table 5.11). This dif-

	Mean ΔF1 (in Hz) by Interview			Statistical Results	
	1	2	3	ANOVA	LSD Post-Hoc
South1	65	171	44	$F(2,27) = 2.77$	$1 \rightarrow 3$ $p = 0.662$
				$p = 0.081$	$2 \rightarrow 3$ $*p = 0.041$
South2	70	176	180	$F(2,27) = 4.14$	$1 \rightarrow 3$ $*p = 0.022$
				$*p = 0.027$	$2 \rightarrow 3$ $p = 0.931$
South3	55	103	115	$F(2,33) = 0.82$	—
				$p = 0.451$	
South4	87	116	145	$F(2,25) = 1.18$	—
				$p = 0.324$	

Table 5.9: Southerners' mean difference in F1 of /ai/ in all environments

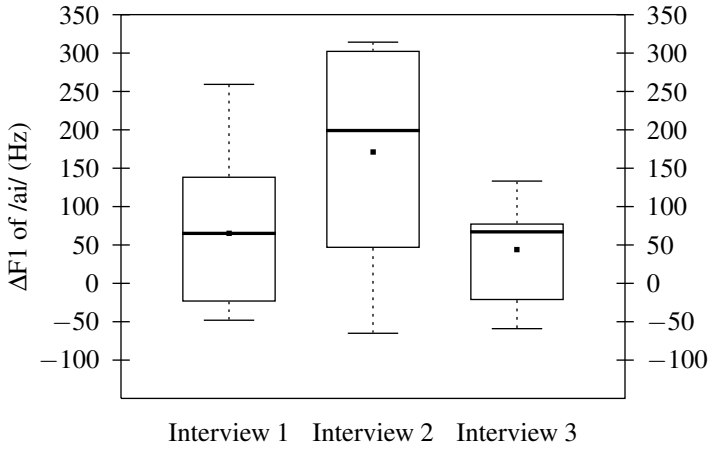

Figure 5.9: South1's difference in F1 of /ai/ across all three interviews

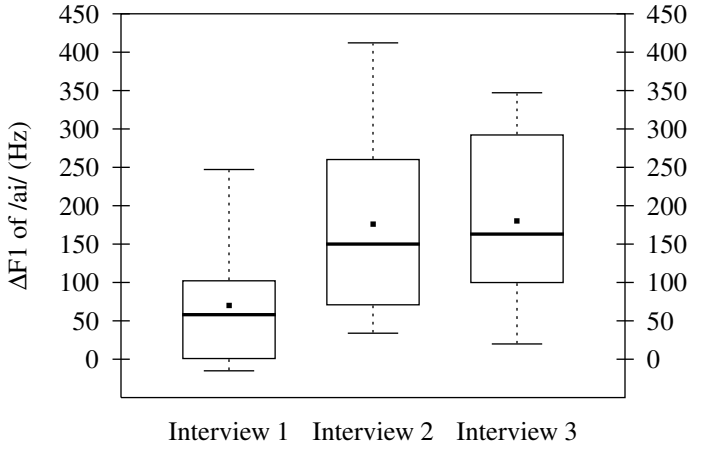

Figure 5.10: South2's difference in F1 of /ai/ across all three interviews

	Mean ΔF1 (in Hz) by Interview			Statistical Results	
	1	2	3	ANOVA	LSD Post-Hoc
South1	38	149	81	$F(2,15) = 1.30$	—
				$p = 0.302$	
South2	60	228	162	$F(2,17) = 4.69$	$1 \rightarrow 3$ $p = 0.062$
				$*p = 0.024$	$2 \rightarrow 3$ $p = 0.325$
South3	54	127	112	$F(2,26) = 0.98$	—
				$p = 0.389$	
South4	89	88	121	$F(2,15) = 0.29$	—
				$p = 0.753$	

Table 5.10: Southerners' mean difference in F1 of /ai/ appearing word-finally and before voiced obstruents

ference, which is shown in Figure 5.11, corresponds to /ai/ taking a path through the vowel space that is more limited in its front/back movement in the third interview as compared to the second. Though South3 showed a marginally significant difference between the three interviews as a whole, it was all found between the first and second interview: the third interview was not significantly different from either of the others. South1 and South4 did not show any significant difference in F2 of /ai/ in any of the interviews. As with F1, eliminating tokens of /ai/ that were not monophthongs in the speakers' home dialects eliminates the significant differences that were present when comparing every token of /ai/, suggesting that the majority of the differences are found in tokens of /ai/ appearing before voiceless obstruents (Table 5.12).

	Mean ΔF2 (in Hz) by Interview			Statistical Results	
	1	2	3	ANOVA	LSD Post-Hoc
South1	435	431	434	$F(2,21) = 0.03$	—
				$p = 0.972$	
South2	209	353	181	$F(2,27) = 4.14$	$1 \rightarrow 3$ $p = 0.697$
				$*p = 0.027$	$2 \rightarrow 3$ $*p = 0.042$
South3	147	292	255	$F(2,33) = 2.60$	$1 \rightarrow 3$ $p = 0.105$
				$p = 0.089$	$2 \rightarrow 3$ $p = 0.556$
South4	313	123	238	$F(2,25) = 1.65$	—
				$p = 0.213$	

Table 5.11: Southerners' mean difference in F2 of /ai/ in all environments

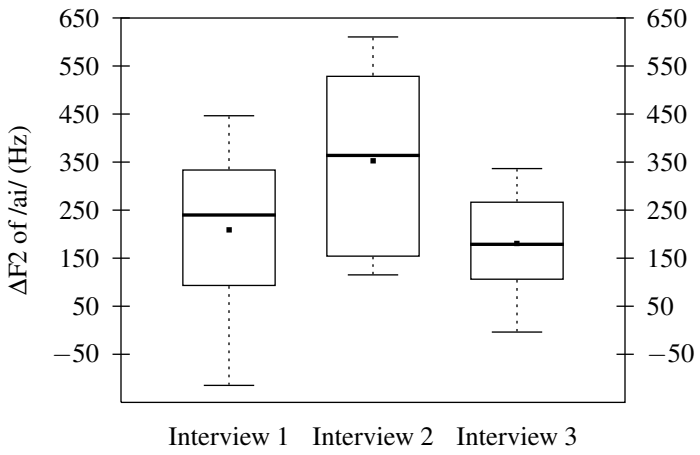

Figure 5.11: South2's difference in F2 of /ai/ across all three interviews

	Mean ΔF2 (in Hz) by Interview			Statistical Results	
	1	2	3	ANOVA	LSD Post-Hoc
South1	121	160	197	$F(2,15) = 0.47$	—
				$p = 0.636$	
South2	220	355	140	$F(2,17) = 2.40$	—
				$p = 0.121$	
South3	161	267	254	$F(2,26) = 1.67$	—
				$p = 0.209$	
South4	162	108	163	$F(2,15) = 0.15$	—
				$p = 0.862$	

Table 5.12: Southerners' mean difference in F2 of /ai/ appearing word-finally and before voiced obstruents

5.4 Discussion

The Southerners show some clear patterns of change which, for several of the speakers, are regular for both features of Southern speech that are investigated. There is one exception to the general Southern pattern, which is South4, the only Southerner not from Atlanta. There are several possible reasons that South4 was the exception to the patterns shared by the rest of the Southerners, which can likely be explained by the fact that South4 was the only speaker not from the Atlanta area. This difference may have resulted for two different reasons, a consequence of the different regions of the South from which speakers come. It may be the case that most Southerners change their speech, like the three here from Atlanta, and that Nashville (South4's hometown) is so close to the Inland South that the stronger Southern dialect in the surrounding area inhibits changing of their dialect. Alternatively, it may be the case that Atlanta, being a very 'un-Southern' city, catalyzed change more easily

for these Georgians than from most other areas of the South.

The pattern of the Atlanta speakers was that they all significantly altered their average pronunciation of /ai/ between the first and second interviews. Within this group, South3 was the only speaker to do so exclusively through a change of F2. The female Southerners (South1 and South2) patterned together, both of them significantly increasing the distance that their average pronunciation of /ai/ took through their vowel space, and also backing their average pronunciation of /o/ fronting between the first and second interview.

However, after this initial patterning together, South1 and South2 took different patterns between the second and third interview. South1 reverted both of her pronunciations back to near their original placement in her vowel space, while South2 maintained her pronunciation from her second interview and kept a statistically distinct pronunciation from her first interview. It's possible that South1's reversion to her initial Southern features was a result of her return home, where she may have resumed her old vowel patterns. South2 however created permanent changes that persevered through her return back to her original dialect region, which implies that the changes may persist far past her first year.

Chapter 6
Conclusions

From these results, we can conclude that social awareness and stigmatization are the main predictors of change in regional dialects. Dialects that have not attained a level of social awareness, such as Northern California, did not change in any significant manner. The Northern Cities shift is somewhere in the middle of social awareness, and those changes cannot be easily categorically described. The Southern dialect is the recognizable across the country, is generally stigmatized, and is the dialect that changed most in this study.

It is also the case that dialect change occurred at a remarkably fast rate. Within the first two months of classes, Southerners had significantly decreased their regional pronunciations and speakers from the Northern Cities had begun to make changes. Significant, permanent changes to speakers' vowel systems have not been recorded at such a rate before. In the case of the Southerners, these changes seem to follow other observed patterns of dialect change, with women changing their vowels before men, and in clearer patterns as well.

There were no speakers who had stable pronunciations over the course of the first two interviews who then began to alter their pronunciations afterward. Thus, the incredibly fast rate of change noted above was in fact the only rate of change. Speakers made the subconscious choice whether or not to alter their speech in the first two months of school, and if speakers did not begin to change within this time frame, then they would not begin to make changes later on in their first year.

If a speaker did have changes over the course of the first two interviews, there were two different courses that speakers took in the third, following their return home. Some speakers, such as South1, reverted back to their original vowel configuration after they returned home. This suggests that their changes were not permanent, and may not persist unless they remained outside of their home dialect region. Other speakers, such as South2, maintained the new vowel system that they possessed in the second interview, even following their return back to their home dialect region. The changes exhibited by these speakers

probably stand a better chance of persevering their newly acquired dialects through at least short-term exposure to their home dialect.

At least some of the speakers, such as South2, seemed to have made permanent changes to their vowel system. This is remarkable, given the rate at which the changes occurred. This is also interesting given that the dialects of the United States continue to diverge from one another. Colleges such as Williams seem to be one of the few locations where modern American dialects may actually be leveled, and in which dialects converge.

It is important to note is that none of the speakers were aware of the changes they made to their vowel systems. Based on questions asked in the third interview, only South1 had any awareness of the change she had made in her vowel system, and this was only because her brothers commented on the changes she made while she was at home. In South1's case, this new conscious awareness the changes she had made may have influenced her ultimate return to her original vowel system.

From the results of this study, we can make predictions about other dialects that may change when young speakers go to college. It happens to be the case that most American dialects that have reached the level of social awareness are also stigmatized (Boston, New York City, etc.). This suggests that most American dialects of which people are aware will be subject to some type of change when their speakers attend colleges such as Williams. It is hard to say what might happen to a dialect of which people are aware, but is not stigmatized. Though there are no American dialects that fit that description, British English does, and it would be interesting to see what would happen to such a dialect. It may be that stigmatization is the triggering condition for change, and British English pattern more along the lines of Northern California. Or, British English may follow the same reduction patterns as the South, because it is mere awareness that triggers change without necessarily requiring stigmatization.

Future research could build on the work completed here. There is a wealth of data that was collected that could be used to investigate a host of other changes in regional speech patterns. Southern speech could be especially interesting, as it is plausible that not all features of Southern speech changed at the same time. If some Southern features change at a different rate than others, there could be implications about how Southerners subconsciously view their own dialect. Those regional markers which Southerns see as 'more-Southern' would likely change first, while those which they subconsciously believe to be 'less-Southern' might not change to the same degree or at the same time or rate.

Even a more complete examination of these speakers' vowel patterns could be enlightening. From these results, it is clear that Northern Californians did not alter their investigated features, Northern Cities speakers displayed a myriad of seemingly unrelated

changes to their two markers, and Southerners began to lose both of the Southern markers that were investigates. But it may be the case that other markers, or even unmarked vowels, could suggest a change toward a particular dialect rather than simply a reduction in their own. It could be the case that speakers are not simply reducing their regional markers, but are adopting features of a different, prominent, unstigmatized dialect.

There are also improvements that could be made in future studies of this type. Firstly, it would be beneficial to extend the length of the interviews, which would both generate more tokens, but also give the option to limit the selection of tokens to standard sociolinguistic environments. In most sociolinguistic studies, tokens are only extracted from speakers' narratives (monologues at least two sentences long, usually when they are talking about their home). In this study, the relatively short interviews limited the available tokens, and required every token in a given interview.

Another wise course of action in future interviews would be to increase the frequency of interviews in the early part of the year. This study has established that significant changes occur within the first two months of speakers' arrival at college. What now warrants investigation is the specific rate at which these changes occur. If interviews could be conducted once a week over the first two months of school, a specific chronology of these changes could be compiled.

References

Boersma, Paul, and David Weenink. 1992/2007. *Praat: Doing phonetics by computer.* [*http://www.praat.org*]

Bortoni, Stella Maris. 1991. Dialect contact in Brasilia. *International Journal of the Sociology of Language* 89: 47–59.

Britain, David. 2002. Diffusion, levelling, simplification and reallocation in past tense BE in the English Fens. *Journal of Sociolinguistics* 6.1: 16–43.

Chambers, J.K. and Peter Trudgill. 1980. *Dialectology*. London: Cambridge University Press.

Doernberger, Jeremy and Jacob Cerny. 2007. The low-back merger in Miami. New Ways of Analyzing Variance (NWAV).

Eckert, Penelope. 2008. Where do ethnolects stop? Manuscript, Stanford University.

Fridland, Valerie. 2001. The social cimension of the Southern Vowel Shift: Gender, age, and class. *Journal of Sociolinguistics* 5.2: 233–253.

Kerswill, Paul. 2002. Koineization and accommodation. In *The handbook of language variation and change*. J.K. Chambers, Peter Trudgill and Natalie Schilling-Estes, ed. 669–702. Oxford: Blackwell.

Kerswill, Paul. 1996. Dialect levelling, koinesation and the speech of the adult migrant. *University of Pennsylvania Working Papers in Linguistics* 3.1: 237–246.

Kerswill, Paul, and Ann Williams. 2005. New towns and koineization: linguistic and social correlates. *Linguistics* 43.5: 1023–1048.

Labov, William. 1998. The intersection of sex and social class in the course of linguistic change. *Language Variation and Change* 2: 205–254.

Labov, William. 2007. Transmission and diffusion. *Language* 83: 344-387.

Labov, William, Sharon Ash, and Charles Boberg. 2006. *The atlas of North American English*. New York: Mouton de Gruyter.

Mesthrie, Rajend. 2001. Koins. In *Concise encyclopedia of sociolinguistics*. Rajend Mesthrie, ed. 485–489. Amsterdam: Elsevier.

Preston, Dennis R. 1996. Where the worst English is spoken. In *Focus on the USA*, Edgar W. Schneider, ed. 297–360. Amsterdam: John Benjamins Publishing Co.

Preston, Dennis R. 2002. Language with an attitude. In *The Handbook of Language Variation and Change*, J.K. Chambers, Peter Trudgill, and Natalie Schilling-Estes, ed. Massachusetts: Blackwell.

Preston, Dennis R. 2005. Belle's body just caught the fit gnat: the perception of Northern Cities Shifted vowels by local speakers. *University of Pennsylvania Working Papers in Linguistics* 11.2: 133–146.

Trudgill, Peter J. 1986. *Dialects in contact*. Oxford: Blackwell.

U.S. Department of Education, National Center for Education Statistics. 2006. *Digest of Education Statistics* [*http://nces.ed.gov/fastfacts/display.asp?id=98*].

Appendix

Included with this thesis are six audio CDs, on which are WAV files of every interview conducted, divided as follows:

- NorCal Disc A — Speakers NorCal1 and NorCal2
- NorCal Disc B — Speaker NorCal3
- Northern Cities Disc A — Speakers NCS1 and NCS2
- Northern Cities Disc B — Speaker NCS3
- South Disc A — Speakers South1 and South2
- South Disc B — Speakers South3 and South4