

The Vowels of Australian Aboriginal English

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Abstract

Basilectal varieties of Australian Aboriginal English (AAE), which are heavily influenced by the indigenous substrate, may have a very restricted set of vowels compared to Standard Australian English (SAE). A comparison of the vowels of a small group of acrolectal AAE speakers with those of the standard accent suggests that even in varieties with the same set of phonemes as SAE, speakers are using a somewhat smaller phonetic vowel space. The lower boundaries of the AAE and indigenous language spaces are very similar and, whereas the SAE vowel space represents an expansion in all directions compared with the indigenous space, the AAE space represents an expansion in an ‘upward’ (lower F₁) direction only. Within their respective spaces, the relative positions of the monophthongs are quite similar in SAE and AAE. Diphthong trajectories are also similar, except that some have shorter trajectories (more centralised second targets) in AAE. Most of the differences there are can be viewed as more conservative features in the AAE accent.

Index Terms: Aboriginal English, vowel, formant frequencies

1. Introduction

The phonetics and phonology of Australian Aboriginal English (AAE) are influenced to varying degrees by the phonetics and phonology of Australian Aboriginal languages. This influence ranges from the heaviest (basilectal) varieties, whose phonology is virtually identical to that of the local indigenous language, through to the lightest (acrolectal) varieties, which may be distinguished from Standard Australian English (SAE), only by some small but persistent phonetic difference, such as the use of a clear (non-velarised) /l/ in post-vocalic position.

2. Background

2.1. The Indigenous substrate

The majority of Australian Aboriginal languages have only three vowels, although many in the Top End of the Northern Territory have five. The vowel qualities of two typical languages are indicated in Figure 1. Warlpiri is a language of central Australia with three vowels (plus a restricted length contrast in a small number of words). Bininj Gun-wok is a language of northern Australia, with five vowel phonemes. It

can be seen that the vowel space of a typical Australian language is quite small.

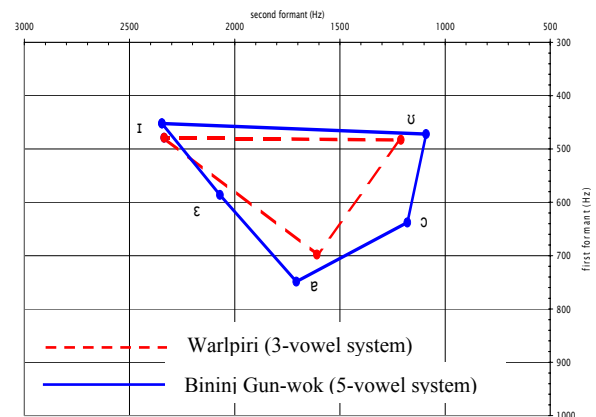


Figure 1: Mean formant values of vowels in two Australian languages (one speaker each). Warlpiri data from [1]; Bininj Gun-wok data from [2].

3. Basilectal varieties: some general observations

3.1. Phonological differences

Unsurprisingly then, basilectal varieties of AAE, which are heavily influenced by the indigenous substrate, may have a very restricted set of vowels compared to SAE. Approximate equivalences are shown in Table 1, for varieties with 5- and 3-vowel substrate systems.

In general, there is no distinction between tense and lax vowels. Thus pairs such as ‘sleep’ and ‘slip’, ‘shared’ and ‘shed’, ‘cart’ and ‘cut’, ‘short’ and ‘shot’, ‘pool’ and ‘pull’ may be pronounced the same. Another pair which may fall together is /e/ and /æ/, with ‘bed’ and ‘bad’ both pronounced as [bed]. The centring diphthong /ɪə/ also merges with monophthong /i:/, so that ‘bead’ and ‘beard’ are indistinguishable. Amongst the other SAE diphthongs, /æɔ/ and /ae/ generally both become [ɐ], as in [ɐs] for ‘house’ and [mɛt] for ‘might’ (‘that house might be empty’ [dɛt ‘ɐs mɛt bɪ ‘ɛmtɪ]). Depending on the substrate system, ‘boat’ may be either [bɔt] or [bət] and ‘face’, may be either [fis] or [fes], although the degree of difference between first and second

targets in SAE /æɪ/ is probably the reason for this vowel having a diphthongal pronunciation in all but the heaviest varieties of AAE.

key word	SAE	AAE (5V)	AAE (3V)
fleece	i:	ɪ	ɪ
kit	ɪ		
near	ɪə		
face	æɪ	ɛ	ɛ
dress	e		
square	e:		
trap	æ	ɐ	ɐ
nurse	ɜ:		
strut	ɐ		
palm	ɐ:		
price	æɛ		
mouth	æɔ		
lot	ɔ	ɔ	ʊ
thought	o:		
goat	əʊ		
foot	ʊ	ʊ	ʊ
goose	ʊ:		
choice	oɪ		

Table 1: *Vowels of SAE and their equivalent in basilectal Australian Aboriginal English*

3.2. Phonetic differences

There is generally no phonetic diphthongisation of the close monophthongs (/i/ → [iɪ], /ɜ/ → [ʊɜ]) as in broad SAE. The merged mid vowels /e/~æ/ and /o/~ɔ/ will tend to have intermediate pronunciations [ɛ] and [ɔ]. In the more acrolectal varieties the monophthongs are similar to those of broad SAE. The diphthongs receive a more standard (broad) pronunciation in all but the heaviest varieties of AAE (see above). SAE /oɪ/ has no near neighbour in many substrate languages, whereas others, especially in the north, have sequences such as /ɔj/ and /ej/, which are phonetically quite similar to the SAE diphthong. Thus, one way or the other, /oɪ/ tends to be pronounced in much the same way as in broad SAE, though often somewhat shorter ([ɔɛ] or even [ɔə]). The diphthongs /æɛ, æɔ, æɪ/ and /əʊ/, are also much shortened in the heavier varieties.

A complicating factor in the description of AAE vowels is that, while the indigenous language (and basilectal AAE) vowel systems are small, allophonic variation is wide and the rules of allophony do not necessarily coincide with those for the standard accent. Amongst the most striking examples of this, is the considerable fronting and raising of vowels in the presence of palatal consonants. Thus, whereas ‘cat’ and ‘dam’ may be [kæt] and [dæm], ‘catch’ and ‘yam’ will always be [kætʃ] and [jæm] respectively. Likewise, ‘food’ is [fud] (or [pud]), but ‘shoot’ is [ʃʊt] (or [sʊt]).

Less striking, but nevertheless very consistent, is the lack of anticipatory assimilation of nasality in vowels. Nasal coarticulation in V+N sequences is rare in indigenous languages. Speakers appear to keep the velum raised until the very end of the vowel (and sometimes beyond), possibly to maintain maximum clarity in the formant transitions at the offset [3]. Thus ‘dance’ and ‘sing’ are pronounced [dæns] and [sɪŋ], rather than [dæns̩] and [sɪŋ̩], as in SAE. This speech habit appears to be a persistent feature of AAE phonetics, even in many acrolectal speakers with no knowledge of an indigenous language.

4. Acrolectal varieties: some measurements

We here report on some vowel formant data recorded from a small group of speakers of an acrolectal variety of AAE. The recordings were made by the second author in Alice Springs.

4.1. Subjects

The subjects were four adult female speakers of AAE. All the speakers live (most of the time) in Alice Springs and speak an indigenous language as their first language (2 Eastern Arrernte, 1 Warlpiri and 1 Western Desert Language).

4.2. Material

The standard /hVd/ word list was used (see e.g. [5]), together with a list of words containing the same vowel set, all with a /d/ as coda, but with varying (singleton) onset consonants (e.g. ‘seed, bid, mud, sword, food, made...annoyed’). Three tokens of each word were read from randomized lists, embedded in the carrier phrase ‘Say ___ again’, giving 6 tokens of each vowel from each speaker.

4.3. Method

The recordings were made in a quiet interior environment, using a *Sony Professional Walkman WM-D6C* recorder and a *Shure SM10A* close-recording headset microphone. The recordings were subsequently digitized using *Adobe Audition* (version 1.5) editing software via a Creative Labs *Audigy 2* sound card at a sampling rate of 22.05 kHz and a resolution of 16-bits.

4.4. Analysis

Formant frequencies were measured with reference to broadband spectrograms, using *Praat* (version 4.5). Vowel targets (one for monophthongs, two for diphthongs) were identified using much the same criteria as [5]. Formants were measured at the centre of the ‘steady state’ portion(s), if

present; otherwise at F1 minimum for high vowels and F1 maximum for low vowels.

4.5. Results

vowel	F1(Hz)	F2 (Hz)
i:	321	2540
e:	770	1615
o:	499	960
ʌ:	356	1760
ɜ:	479	1728
ɪ	361	2459
e	508	2144
æ	641	2024
ɐ	796	1603
ɔ	613	1357
ʊ	383	1088

Table 2: Mean formant values of monophthongs pronounced by four female speakers of Australian Aboriginal English

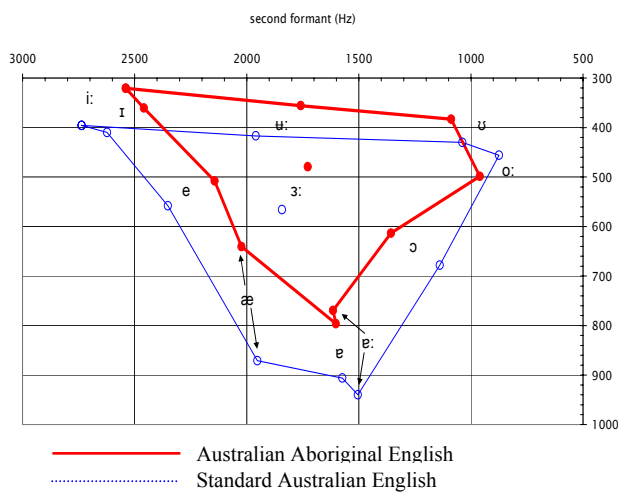


Figure 2: Formant plot of monophthongs of 4 female Australian Aboriginal English speakers, compared with Standard Australian English of South Australia [4].

Tables 2 and 3 show the mean formant frequency values of the monophthongs and diphthongs pronounced by the four speakers of AAE.

vowel	F1(Hz)	F2 (Hz)
ae	753	1317
	598	1879
æɪ	690	1896
	389	2370
oɪ	506	933
	423	2080
æɔ	733	1866
	652	1525
əʌ	651	1506
	420	1626

Table 3: Mean formant values of diphthongs pronounced by four female speakers of Australian Aboriginal English

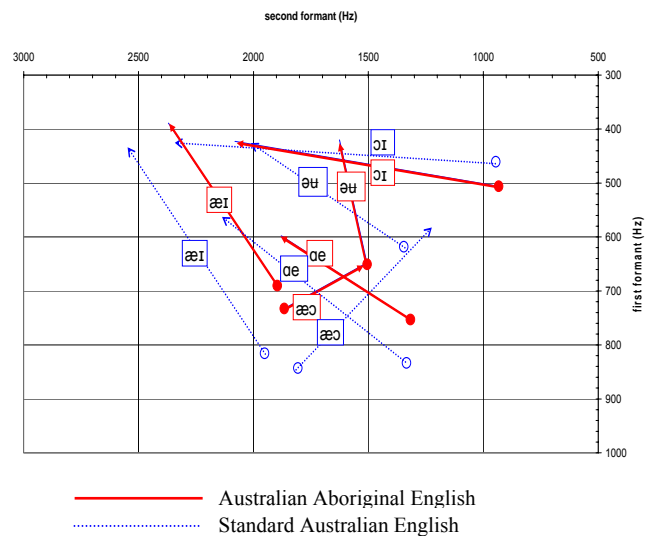


Figure 3: Formant plot of diphthongs in 4 female Australian Aboriginal English speakers, compared with Standard Australian English of South Australia [4]

Figures 2 and 3 show the mean formant frequency values compared with those of a group of 92 female speakers of SAE from South Australia [4].

4.6. Discussion

Since the data are not normalised, it is tempting to conclude that some differences between the two groups may be attributed to the fact that the Aboriginal speakers are somewhat older than the SA speakers. However, since the SA speakers were aged 20 or above, it seems unlikely that there would be any significant difference in mean vocal tract length between the two groups. All first formant values (except those of /o:/) are lower in the AAE group. However, of the second formant values, only those of the high front and central vowels (/i:, ɪ, e, ʌ, ɜ:/) are lower; all others are somewhat higher. This suggests that the AAE speakers are using a somewhat smaller overall vowel space than the SA group.

A comparison of Figure 2 with Figure 1 shows that the lower boundaries of the AAE and indigenous language spaces are

very similar, i.e. that the /ɛ:/, ɛ/ pair in AAE is very close to the /ɛ/ of the indigenous languages and the /e/ and /o:/ of AAE are close to the indigenous /ɪ/ and /ʊ/ respectively. Thus, whereas the SAE vowel space represents an expansion in all directions compared with the indigenous space, the AAE space represents an expansion in an ‘upward’ (lower F₁) direction only. Within their respective spaces, the relative positions of the vowels are quite similar across the two varieties. In AAE the /æ/ is rather closer and the /o:/ rather more open relative to their neighbours. Both /ɜ:/ and /ɜ:/ are slightly further back. All of these differences can be viewed as more conservative features, as the movements in question – i.e. lowering of /æ/, raising of /o:/, fronting of /ɜ:/ and /ɜ:/ have occurred comparatively recently in SAE.

The diphthongs of AAE fall largely within the space defined by the monophthongs. In terms of relative movement within the vowel space, the main differences from SAE concern /æɪ/ and /æʊ/, both of which have somewhat shorter trajectories than the standard accent. Phonetically these vowels are more like [aɪ] and [aʊ] in AAE. The differences in the realisation of /əʊ/ look rather more dramatic than they actually are. Firstly, although the second target of this diphthong has a much lower F₂ in AAE than in SAE, it nevertheless corresponds closely to the monophthong /ʊ/ target in both speaker sets. Secondly, although the first target is clearly lower and more centralised in AAE, this is probably typical of most accents of SAE [5]; it is the more retracted and rounded target of the South Australian accent which is the less typical pronunciation. Thus, while the standard symbol sequence /əʊ/ is a reasonably accurate phonetic representation of the AAE sound, the South Australian equivalent would be more accurately represented as [ɔʊ] [4].

5. Conclusion

Any conclusions drawn from this small data set must be extremely tentative. It must be borne in mind that the speakers in this study were representative of only one specific variety. They were bilingual in AAE and a central Australian indigenous language. The results suggest, however, that even acrolectal AAE speakers such as these are using a somewhat smaller phonetic vowel space than typical speakers of SAE. First formant values for AAE vowels tend to be lower overall, whereas second formant values are lower for high front and central vowels and higher for the remainder. This results in an overall space (for both monophthongs and diphthongs) whose boundaries are similar to those of the indigenous language vowel space, with some ‘upward’ expansion. Within their respective spaces, the relative positions of both monophthongs and diphthongs are quite similar across the two varieties of Australian English. The few differences there are can be viewed as more conservative features in the AAE accent.

6. References

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