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The North Wind versus a Wolf: short texts for the description and measurement of English pronunciation

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For many years, the passage ‘The North Wind and the Sun’ (NWS) has been used for phonetic research into different languages. However, there are many shortcomings with the passage for the description of varieties of English, including the absence of some sounds, such as /z/ and syllable-initial /θ/, problems with the text for the measurement of rhythm, and issues regarding acoustic measurements of /æ/ and /i/. An alternative passage, ‘The Boy who Cried Wolf’, is suggested, and measurements of the monophthongs based on recordings of the Wolf passage by three RP British English speakers are compared with similar measurements of the vowels in the NWS passage.

1 Introduction

A number of texts have been suggested for the comparison of languages. In the nineteenth century, Henry Sweet recommended a tale about a rat that was unable to make up its mind, and this ‘Arthur the Rat’ passage has been used quite widely for description of varieties of English, especially in the DARE corpus of American English (von Schneidermesser 2006). However, at 361 words, this passage is a little long (Abercrombie 1964).

Since 1912, the International Phonetic Association has invited linguists to contribute phonetic versions in different languages and dialects of a much more compact piece (113 words), ‘The North Wind and the Sun’ (henceforth NWS), and the provision of this standard short text to allow us to compare the pronunciation of language varieties has proved an exceptionally valuable resource. Not only do there now exist a large number of descriptions of its rendition in a wide range of languages, but transcriptions have also been provided for many accents of English, including Californian American English (Ladefoged 1999), Southern Michigan American English (Hillenbrand 2003), Tyneside British English (Watt & Allen 2003) and RP British English (Roach 2004). In addition, on the CD-ROM accompanying Schneider et al. (2004), there are recordings of the passage for 33 varieties of English from around the world as well as three substantially modified versions for English-based creoles. Salbrina (2006) bases her acoustic description of the vowels of Brunei English on recordings of the NWS text, and Levis (2005) uses it to compare the intonation patterns of Singapore and American speakers of English.

The full English text as it occurs in the *Handbook of the IPA* (IPA 1999: 39) is as follows:

The North Wind and the Sun

The North Wind and the Sun were disputing which was the stronger, when a traveller came along wrapped in a warm cloak. They agreed that the one who first succeeded in making the traveller take his cloak off should be considered stronger than the other. Then the North Wind blew as hard as he could, but the more he blew the more closely did the traveller fold his cloak around him; and at last the North Wind gave up the attempt. Then the Sun shone out warmly, and immediately the traveller took off his cloak. And so the North Wind was obliged to confess that the Sun was the stronger of the two.

Although the passage serves its purpose reasonably well, there are a number of problems with it for the description of varieties of English, and indeed some of the issues carry over when the text is translated into other languages. In this paper, these issues will be discussed, and measurements of the monophthong vowels from recordings of the passage will be presented. Then an alternative short passage that is suitable for a more comprehensive description of English will be suggested, and measurements of vowels will be demonstrated based on this alternative passage.

The discussion here will focus on the use of short texts for the description of English pronunciation, including that of the many new varieties of English that are emerging around the world. Whether passages such as these can serve for diagnostic purposes for learners of English is a separate issue which might be pursued by other researchers.

2 Problems with the NWS passage

Some of the sounds of English are absent from the NWS passage, and others have a restricted occurrence. Although all the monophthongs of English are found in the passage, a number of other sounds are not, particularly /ʒ/, medial and initial /z/, initial /θ/, word-final /l/, word-final consonant clusters ending in /s/ or /z/, and the diphthongs /ɔɪ/ and /eə/. Furthermore, there are some issues that need to be considered if the passage is to be used for the measurement of rhythm, and additional problems arise for the measurement of vowels. Each of these matters will now be considered in turn.

2.1 The absence of /ʒ/

Although /ʒ/ is by far the least common of the English consonants, occurring over three times less frequently than the next rarest consonant, /θ/ (Cruttenden 2001: 216), it does occur in a few common words, particularly *usually*, which speakers of English from China often pronounce as [ju:ɹɪli] (Deterding 2006). However, the pronunciation of this consonant will never become apparent if description of English is based on the NWS passage.

2.2 Initial and medial /z/

In the NWS passage, /z/ only occurs in final position and only in the function words *was*, *his* and *as*. As there is a tendency for at least some devoicing of word-final voiced fricatives in most varieties of English (Docherty 1992: 39, Shockey 2003: 31), and as function words are likely to be spoken quite fast, it is difficult on the basis of recordings of the NWS text to determine whether a distinction is maintained between /s/ and /z/. It is a pity that there are no instances of initial /z/ (e.g. *zoo*) or medial /z/ (e.g. *visit*, *cousin*).

2.3 The dental fricative /θ/

/θ/ occurs four times in the NWS passage, but all four are in the same word, *north*, where it is in final position. However, in Singapore English there is a contrast between initial and final /θ/: initial /θ/ tends to be realized as [t] while final /θ/ is generally [f], so *three* may be [tri:] while *mouth* is likely to be [maʊf] (Moorthy & Deterding 2000, Wee 2004). On the basis

of the NWS passage, one would never discover that in Singapore [t] is the most common replacement for /θ/, and one would assume that, whenever there is a substitution for /θ/ in Singapore English, it is always [f], just as in certain types of London English (Wells 1982: 328) and Hong Kong English (Hung 2002).

2.4 Final consonant clusters ending in /s/ and /z/

While there are plenty of words ending in consonant clusters in the NWS passage (*wind, wrapped, first, fold, around, last, attempt, obliged*), every single one has a final /t/ or /d/. It is well established that final alveolar plosives are often deleted from consonant clusters in many varieties of English, including inner-circle varieties such as American (Guy 1980) and British RP (Fabricius 2002) as well as new varieties such as Singapore English (Cruz-Ferreira 2005, Gut 2005); thus the NWS passage offers us plenty of material to evaluate the frequency of such deletion in various phonetic environments.

In contrast, the NWS passage includes no instances of /s/ or /z/ at the end of consonant clusters. Final /s/ and /z/ are rarely deleted in inner-circle varieties of English, but they may get omitted in some new varieties. The NWS passage does not enable us to find out how speakers of these new varieties of English might deal with such clusters.

2.5 Dark /l/

In many varieties of English, such as Estuary English (Cruttenden 2001: 88), dark /l/ tends to be produced as a vowel, and this feature is so widespread that Wells (1982: 259) suggests that it might one day become part of standard RP. In the NWS passage, there is just one instance of a dark /l/, in *fold*, in which it follows /əʊ/ and so it is extremely hard in recordings of the passage to tell whether or not there is a lateral consonant. There are no instances of syllabic /l/ (e.g. *little*) or other word-final /l/ (e.g. *fool, hill*).

2.6 Diphthongs and triphthongs

In addition to the absence of /ɔɪ/ or /eə/ from the NWS passage, there are no triphthongs such as /aɪə/ or /aʊə/, so on the basis of the passage we cannot ascertain the extent of the smoothing of these sounds (Cruttenden 2001: 287) which is nowadays so common in RP that Ladefoged (2001: 29) lists /aə/ as one of the vowels of British English.

Finally, there are no instances of /ʊə/. Nowadays this vowel is not used by many younger RP speakers in words such as *poor* and *tour* – /ɔ:/ is preferred in both (Wells 1999) – so it is a pity that the text does not allow us to find out how a particular speaker produces words such as these, where traditional pronunciation has /ʊə/.

2.7 Lexical repetitions

One feature of the NWS text is that it is characterized by substantial repetition of lexical items, so that its total of 113 words actually includes only 64 different words, as the other 49 are repeats of previous items. We can summarize this by saying that just over 43% of the words are repeats.

Although some repetition is inevitable in any text, particularly of function words such as *the* (18 tokens) and *and* (4 tokens), the NWS text also includes substantial repetition of the content words such as *north, wind, traveller* and *cloak*, each of which occurs four times, and *stronger* and *sun*, each of which occurs three times. This degree of repetition of content words results in a limited range of phonetic shapes and explains why so many of the sounds of English are absent.

In fact, the repetition of these lexical items also occurs when the NWS passage is translated into other languages. Table 1 provides a summary of the occurrence of the equivalents of these words for the NWS passage in French (Fougeron & Smith 1999), German (Kohler 1999) and

Table 1 Repetition of words in the NWS text for various languages.

English (IPA 1999)		French (Fougeron & Smith 1999)		German (Kohler 1999)		Chinese (Lee & Zee 2003)	
Word	No	Word	No	Word	No	Word	No
north wind	4	bise	3	Nordwind	4	beifeng	4
sun	3	soleil	3	Sonne	3	taiyang	3
traveller	4	voyageur	3	Wanderer	4	guolude	2
cloak	4	manteau	3	Mantel	4	paozi	4
stronger	3	plus fort	3	Stärkere(n)	3	benling da	3
Total words	113		112		108	(characters)	161
Repetition	43.4%		42.9%		36.1%		50.9%

Standard Chinese (Lee & Zee 2003). It can be seen that the degree of repetition is similar to that found in English except that in French there are only three tokens of each of *bise*, *voyageur* and *manteau*, and in Chinese there are only two instances of *guolude*.

Table 1 also shows the total number of words for the NWS passage as well as the overall degree of repetition for each of these languages. (For Chinese, it is often hard to determine exactly what constitutes a word, so the analysis is based on the occurrence of characters.) In French the rate of repetition at nearly 43% is very similar to that in English, and only in German is the figure a little less. (The result is higher for Chinese as it includes repeated use of the same suffix.)

Of course, repetition of words is not necessarily a bad thing: it provides information on the extent of de-accenting for repeated information, it allows us to evaluate the degree of variation by a speaker, and it also lets us see what happens to the pronunciation of a word in different phonetic environments. For example, we can compare the potential deletion of word-final /d/ when it is before a consonant as in *wind blew* against its more likely retention with a following vowel as in *wind and*; and in the French version (Fougeron & Smith 1999), *voyageur* is once transcribed with a final [ʁ] and twice without. However, as we have seen, it does result in some of the sounds of English not occurring, and this absence of sounds also happens in the other languages: in the French version, the palatal nasal /ɲ/ and the vowel /ø/ do not occur; in German, there are no examples of either of the non-close front rounded vowels /ø/ and /œ/; and in Chinese, there are no instances of the aspirated palatal affricate /tʂʰ/ (spelled 'q' in the standard Pinyin orthography), and the front rounded vowel /y/ only occurs as an approximant at the start of a syllable and never as the syllabic peak.

It is inevitable that some sounds will be missing or have restricted occurrence in any short text that is used for the comparison of different languages, and this should not deter us from continuing to add to the incredibly valuable collection of renditions of the NWS passage in a range of languages. However, researchers who want to provide a comprehensive description of a particular language variety should realize the limitations of the NWS text, and they will usually need to prepare supplementary materials to ensure that all the sounds are covered.

2.8 Measurement of rhythm

Comparison of the rhythm of different languages sometimes depends on the overall ratio of the duration of vowels and consonants (Ramus, Nespors & Mehler 1999), and it is possible that the NWS text works well for estimating this. However, for comparison of the rhythm in varieties of English, there are some problems. Investigations of syllable-based and stress-based rhythm usually compare the duration of consecutive syllables (Deterding 2001) or the vowels in consecutive syllables (Low, Grabe & Nolan 2000) on the grounds that stress-based rhythm tends to be characterized by an alternation of strong and weak syllables. However, in the NWS passage, *North Wind* is repeated four times, and this phrase has two strong syllables together. Indeed, there are instances where there are four consecutive strong syllables: *North*

Wind gave up and Sun shone out warmly. While these sequences of words may provide excellent material for a metrical study to see how speakers deal with stress clashes, if they are used for comparison of stress- and syllable-based rhythm, it is not easy to detect differences between varieties of English.

Quite apart from such issues regarding the alternation of strong and weak syllables, there are some practical problems that arise when attempting the measurement of rhythm using the NWS passage. One of the greatest sources of variability between different measurers arises from decisions about how many syllables a word has, so one person may hear three syllables in words such as *basically* while another may judge there to be four syllables even in the same token of this word (Ong, Deterding & Low 2005). Unfortunately, in the NWS passage the word *traveller* occurs four times, and some speakers use two syllables, others use three, and in many cases it is hard to be certain. Judgments about how many syllables there are in tokens of this word are likely to result in a huge element of subjectivity in the measurements.

Finally, if the measurement of rhythm is to depend on the duration of vowels, it is very hard to determine where an approximant ends and the following vowel begins, and there are rather a lot of pre-vocalic approximants in the NWS passage (*wind, were, which, was, when, warm, one, stronger, traveller, wrapped, around*). This substantially exacerbates the subjectivity of vowel-based measurements of rhythm.

2.9 Measurement of vowels from the NWS passage

Recordings of the NWS passage were made by three male RP British English speakers (B1, B2 and B3). They were aged 47, 48 and 57, and all had grown up in London though all had spent many years abroad. All were lecturers in English at the National Institute of Education (NIE) in Singapore at the time of the recordings.

The recordings were made directly onto a computer in the Phonetics Laboratory at NIE using CSL software (Model 4500, Version 2.7.0) from KAY Elemetrics. A high-quality Shure SM48 dynamic microphone was placed a few inches from each speaker's mouth, and the recordings were digitized at 22,050 Hz. All measurements were subsequently made using PRAAT Version 4.3.12 (Boersma & Weenink 2005), with LPC formant tracks overlaid on digital spectrograms.

The first two formants of clear instances of all the eleven monophthong vowels of RP British English were measured, as far as possible avoiding preceding approximants which would have severe coarticulatory effects on the vowels (Deterding 1997). Unfortunately, the only occurrences of /æ/ that could be used all involve a preceding /r/ (*traveller, wrapped*), as the other potential instances of /æ/ are in function words that may be realized using a weak form (*and, as, that, than, at*).

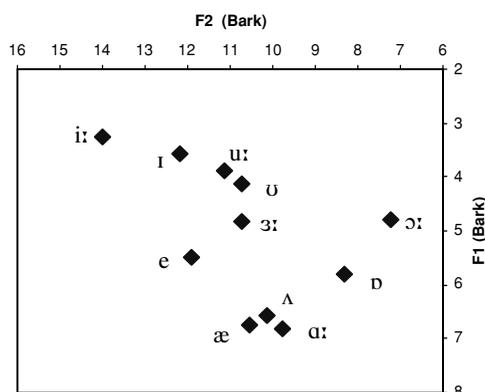
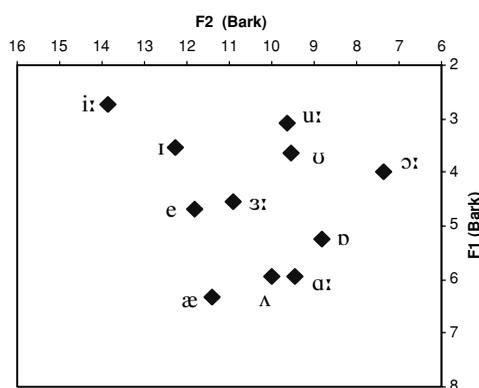
At least two tokens were measured for all of the vowels of each speaker except /ɜ:/, for which there is just one token (*first*). The words that were measured are listed in table 2, and the average values of the first two formants (F_1 and F_2) for these three speakers are given.

In figure 1, a plot of F_1 against F_2 is shown for the values from table 2, using the auditory Bark scale suggested by Zwicker & Terhardt (1980), and this can be compared with figure 2, which plots the values measured for speakers from radio broadcasts by the BBC in the MARSEC corpus (Roach, Knowles, Varadi & Arnfield 1993) reported in Deterding (1997).

The main differences are as follows: in the NWS measurements, /u:/ and /ʊ/ have higher F_2 values, suggesting they are more fronted; /æ/ has lower F_2 values, suggesting it is a more central vowel; and /ɪ/ is more distant from /e/. The first of these differences may be partly explained by the words used for measurement: the words in Deterding (1997) included tokens with a following /l/ (*school, pool, full*) and also a preceding /r/ (*groups, through, room*) and a preceding /w/ (*wounded, would*), all of which result in a lowering of F_2 . However, it also seems to be true that /u:/ and /ʊ/ are becoming increasingly front in modern RP (Hawkins & Midgley 2005), so the current measurements from the NWS text may reflect this. The difference for

Table 2 Tokens measured from the NWS passage and average values for the first two formants of each of the monophthong vowels of RP British English.

Vowel	Words	F ₁ (Hz)	F ₂ (Hz)
i:	succ <u>ee</u> ded, imm <u>ee</u> diately	336	2308
ɪ	cons <u>id</u> ered, d <u>id</u>	369	1733
e	then (x2), att <u>em</u> pt, conf <u>ess</u>	590	1672
æ	tr <u>av</u> eller (x4), wr <u>app</u> ed	748	1360
ʌ	sun (x3), <u>oth</u> er, up	724	1282
ɑ:	hard, last	757	1211
ɒ	off (x2), sh <u>on</u> e	625	973
ɔ:	n <u>orth</u> (x4), m <u>ore</u> (x2)	506	815
ʊ	could, to <u>ok</u>	433	1401
u:	blew (x2), t <u>wo</u>	402	1491
ɜ:	first	510	1401

**Figure 1** Plot of the first two formants for the RP speakers reading the NWS passage.**Figure 2** Plot of the first two formants for the speech of BBC speakers (from Deterding 1997).

/æ/ arises because all the tokens measured for this vowel involve a preceding /r/. Salbrina (2006) reports a similar shift for /æ/ because of the preceding /r/ for her measurements of female speech for both RP and Brunei English recordings of the NWS passage. Finally for /ɪ/, the words selected for measurement are not ideal, because /ɪ/ in *considered* is in the middle syllable of a polysyllabic word, and in *did* the vowel occurs in a function word which is generally not stressed. The results for /æ/ and /ɪ/ illustrate why the NWS passage is not ideal for the acoustic description of English vowels. We might also note that the result for /ɜ:/ is based on a single word, *first*, and it is always best to have more than one token for acoustic measurements.

We will now consider an alternative passage, to see how successfully it can allow for a description of the sounds of English.

3 The Wolf passage

The suggested alternative text for the description and measurement of English, entitled ‘The Boy who Cried Wolf’, is also adapted from a well-known fable by Aesop. The original fable

has been substantially rewritten in order to provide suitable material for the description of English pronunciation.

The Boy who Cried Wolf

There was once a poor shepherd boy who used to watch his flocks in the fields next to a dark forest near the foot of a mountain. One hot afternoon, he thought up a good plan to get some company for himself and also have a little fun. Raising his fist in the air, he ran down to the village shouting 'Wolf, Wolf.' As soon as they heard him, the villagers all rushed from their homes, full of concern for his safety, and two of his cousins even stayed with him for a short while. This gave the boy so much pleasure that a few days later he tried exactly the same trick again, and once more he was successful. However, not long after, a wolf that had just escaped from the zoo was looking for a change from its usual diet of chicken and duck. So, overcoming its fear of being shot, it actually did come out from the forest and began to threaten the sheep. Racing down to the village, the boy of course cried out even louder than before. Unfortunately, as all the villagers were convinced that he was trying to fool them a third time, they told him, 'Go away and don't bother us again.' And so the wolf had a feast.

This Wolf passage is nearly twice as long as the NWS text (216 versus 113 words), and it generally takes longer to read (about 75 versus 40 seconds). However, although the passage is longer, there is actually a little less repetition of words. The only content words that are repeated are: *wolf* (4 instances), *boy* (3), *forest* (2), *village* (2) and *villagers* (2). In all, there are 134 different words and only 38% of them are repeats, which is less than the 43% found for the shorter NWS passage. This reduced repetition helps ensure there is a greater range of phonetic environments.

The Wolf passage has at least three clear instances of each of the monophthong vowels of English, all of them easily measurable without the need to worry about neighbouring approximants. For RP British English, *afternoon* and *after* are two of the tokens for /ɑ:/, and American English generally does not have /ɑ:/ in these words, but *flocks*, *not* and *bothered* can be used instead for this vowel in most varieties of American English. In fact, *after* and *afterwards* constitute valuable diagnostic words for whether items in the BATH lexical set have /æ/ or /ɑ:/ (Wells 1982: 232).

In addition, there are plenty of instances of /ɔɪ/ in *boy*, /eə/ occurs in *air*, a potential instance of /ʊə/ occurs in *poor*, and the triphthong /aɪə/ occurs in *diet*.

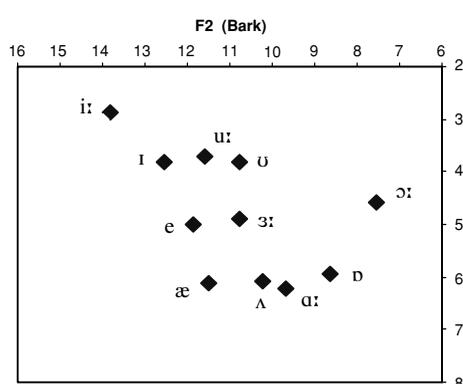
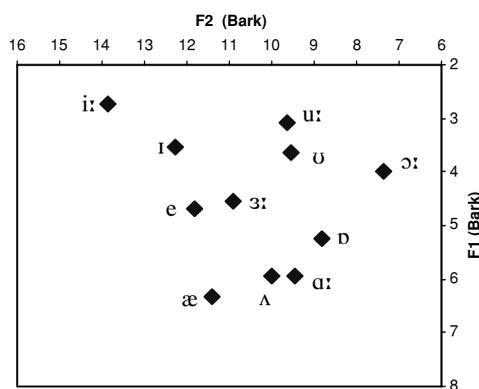
For the consonants, initial /θ/ occurs in *thought*, *threaten* and *third*, /ʒ/ occurs in *pleasure* and *usual*, initial /z/ occurs in *zoo* and medial /z/ occurs in *raising*, *cousins* and *exactly*. Dark /l/ occurs in final position after a vowel (*full*, *fool*), as part of a final cluster (*wolf*, *fields*, *himself*) and as a potential syllabic consonant (*little*, *successful*). There are also consonant clusters involving final /s/ (*flocks*) and /z/ (*fields*, *homes*, *cousins*), and plenty of other final consonant clusters at the end of an utterance (*feast*), before a vowel (*forest* and *fist in*) and before another consonant (*next to*, *forest near*, *rushed from*, *convinced that*).

Finally, there are five minimal pairs, to test distinctions that do not occur in all varieties of English: *fool* and *full* for /u:/ ~ /ʊ/; *feast* and *fist* for /i:/ ~ /ɪ/; *dark* and *duck* for /ɑ:/ ~ /ʌ/; *short* and *shot* for /ɔ:/ ~ /ɒ/; and *raising* and *racing* for /z/ ~ /s/. Both *raising* and *racing* occur at the start of a sentence with five following syllables in the same clause, to try to ensure a similar rhythmic environment and thereby allow a comparison of the duration of the preceding vowel.

Inevitably, with the rewriting of the fable to ensure that all these features are packed into a short text, it must be admitted that the passage is somewhat contrived, and it does not really flow quite like a fable should. However, it does provide a good range of the sounds of English and, furthermore, it allows straightforward measurement of the monophthongs. These measurements will now be considered.

Table 3 Words measured from the Wolf passage and average values for the first two formants for each of the monophthong vowels of RP British English.

Vowel	Words	F ₁ (Hz)	F ₂ (Hz)
i:	sheep, <u>e</u> ven, feast	296	2241
ɪ	<u>l</u> ittle, fist, this, ch <u>i</u> cken, did, conv <u>i</u> nced	396	1839
e	she <u>p</u> herd, next, get, ple <u>a</u> sure, succ <u>e</u> ssful	532	1656
æ	plan, ex <u>a</u> ctly, <u>a</u> ctually, beg <u>a</u> n, had	667	1565
ʌ	up, c <u>o</u> mpany, fun, c <u>o</u> usins, much, duck, come	661	1296
ɑ:	dark, <u>a</u> fternoon, <u>a</u> fter	680	1193
ɒ	flocks, hot, not, shot, b <u>o</u> ther	643	1019
ɔ:	thought, short, more, course, bef <u>o</u> re, un <u>o</u> rtunately	480	857
ʊ	foot, good, l <u>o</u> oking	395	1408
u:	aftern <u>o</u> on, soon, two, zoo	386	1587
ɜ:	heard, conc <u>e</u> rn, third	519	1408

**Figure 3** Plot of the first two formants for the RP speakers reading the Wolf passage.**Figure 2 (repeated)** Plot of the first two formants for the speech of BBC speakers (from Deterding 1997).

3.1 Measurement of vowels from the Wolf passage for RP speakers

Recordings were made of the same three male RP British English speakers as above, and the measurements were made in the same way. The words that were measured are listed in table 3. For the Wolf passage, there was no case where two tokens of the same word had to be used (though one might argue that, for the measurement of /ɑ:/, *after* and *afternoon* involve the same morpheme), so overall there is a much better balance of environments than for the NWS passage, where, it will be recalled, in some cases four tokens of the same word were measured. Although *did* is also measured in the Wolf passage, here the word is used for emphasis, so it is generally stressed and it does not present the same problem as in the NWS passage where it is more likely to be unstressed.

The measurement of the first two formants for these tokens was reasonably straightforward. The average formant values are shown in table 3.

The values from table 3 are plotted in figure 3, and this can be compared with the values from Deterding (1997) in figure 2 (which is repeated here for convenience). It can be seen that in figure 3 the vowels are quite evenly spaced about the plot, and the match with figure 2 is rather closer than the match between the NWS measurements and those from Deterding

(1997) shown in figures 1 and 2. The biggest difference remains the location of the two close back rounded vowels /u:/ and /ʊ/, which, as mentioned above, may reflect a recent shift in the quality of these vowels.

4 Conclusions

The limitations of the use of the NWS passage for descriptive and acoustic research on varieties of English have been discussed, and an alternative passage, ‘The Boy who Cried Wolf’, has been shown to work much better.

This does not mean that research based on the NWS passage should be abandoned. A huge amount of valuable material has been recorded and described using it, and there is no question of any of it being discarded. Indeed, the NWS passage will continue to provide an exceptionally valuable resource for comparing a wide range of languages, and researchers should be encouraged to continue adding to this body of data.

However, when collecting material for describing English, researchers need to be aware of the shortcomings of the NWS passage, and they might like to consider using the Wolf passage either in addition or instead. And people working on the phonetic description of other languages also need to be aware of the probable limitations of translations of the NWS text.

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