

## A PHONEMIC TRANSCRIPTION SYSTEM FOR NEW ZEALAND ENGLISH

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Phonemic transcription is one of the skills which is usually taught at the beginning of any course in linguistics or the English language. There are however a number of transcription systems available, and it is essential to choose one which is both adequate and appropriate. The notations used by, for example, Daniel Jones (1960), Gimson (1962) and Ida Ward (1948) are well-known and have in the past been used to teach transcription to New Zealand students, but they share one disadvantage, for New Zealanders, in that they describe Received Pronunciation (RP), from which NZ pronunciation differs in a number of respects. This means that in practice, when students are taught one of the RP notations, they have to accept certain conventions which are generally felt to be unsatisfactory and unnatural, because they do not represent the students' own pronunciation. At Victoria University, therefore, we have devised a notation which, in the light of our experience in teaching transcription, corresponds more closely to the realities of NZ pronunciation. In doing this, we have been guided by the students themselves, and other "native speakers" of NZ English, whose intuitions we have tried to take into account.<sup>1</sup>

Before discussing a New Zealand notation in detail, I shall outline the properties and characteristics of notations in general, since transcription systems differ in other ways quite apart from the particular accent they are describing. Jones, Gimson, and Ward, for example (henceforth J/G/W), all describe the same accent (RP) yet differ from each other in several respects. In devising a notation, a number of principles must be followed, and differences in the relative emphasis given to each have an effect on the resulting notation. The principles can be outlined as follows:—

- (a) *Symbol economy*: Phonemic analyses, and hence notations, which are more economical in the use of symbols are preferable, though there is often a price to pay.
- (b) *Sound-symbol correspondence*: Each sound in the language should be allotted one symbol only, and, conversely, each symbol should represent only one sound.
- (c) *Phonetic information*: Notations which give the maximum amount of phonetic information are preferable, though this depends very much on who is going to use the system. If it is for foreign learners, more information is desirable than if it is for native speakers.
- (d) *The Cardinal vowels as reference points*: The Cardinal vowels devised by Jones may or may not be used as reference points for vowel notation.

We can illustrate the different emphases given by J/G/W by comparing the vowel of *bit* (*bin*, *bid* etc) with that of *beat* (*been*, *bead* etc.). There are differences of *length* (*beat* is longer than *bit*) and of *quality* (*beat* is a closer and more fronted vowel<sup>2</sup> than *bit*). Jones chooses to emphasise the length difference, and hence transcribes *bit* with /i/, *beat* with /i:/, where : represents a length mark. Ward, on the other hand, emphasises the quality difference by using a completely different symbol for each vowel; /ɪ/ (known as "cap i") for *bit*, /i/ ("dotted i") for *beat*. Jones' method has the advantage of symbol economy — principle (a) above — because he can relate five pairs of English vowels according to length in this way (see page 4), so that he needs only five symbols plus the length mark, where other systems require ten separate symbols. Ward's system has the advantage of sound : symbol correspondence — principle (b) — and avoids the association of two vowels such as /ɪ/ and /i/, which are probably unrelated phonologically even if they are phonetically similar. Gimson on the other hand shows both length and quality differences by transcribing *bit* with /ɪ/ and *beat* with /i:/. He does this because he aims to help the foreign learner, who will benefit from the extra phonetic detail

1 The author comes from England and has been resident in New Zealand for five years. The advantage of being an outsider is that the special qualities of N.Z. pronunciation, particularly the vowels, are relatively easily perceived; the disadvantage of course is that one lacks the NZ-born native's gefühl.

2 But cf. the discussion on the diphthongal character of this vowel, below (p17).

which shows these vowels differing in two dimensions instead of just one. Gimson admits that his notation here is redundant as far as the native speaker is concerned.

Further choices of notation depend on whether the Cardinal vowels are used as reference points. Lyons (1968) points out, quite rightly, that the actual choice of symbol for a phoneme, once it has been established, is quite arbitrary and need not necessarily reflect phonetic values at all; the vowel of *bit*, *bin* etc. could be represented by a number like 15, without ambiguity, provided transcriber-readers are told that "15" means "the vowel of *bit*, *bin* etc." But in practice, notations generally try to represent phonetic values to some extent – cf. principle (c) above. Thus, for vowels, the Cardinal-vowel scheme devised by Jones is available as a set of reference-points. Not all linguists use this scheme; some American transcriptions, especially those of Bloch and Trager, Trager and Smith, and their successors, which have been very influential, establish their own values for the vowel symbols. British systems however have tended to make use of the Cardinal vowel scheme. For example, the vowel of *bet*, *bed* etc. in RP has a quality roughly midway between Cardinal 2 (C2), [e], and C3, [ɛ], so that the choice of either symbol for the phoneme would be equally appropriate. Ward chooses ɛ, Gimson e, while Jones uses e in his *Outline of English Phonetics* and ɛ in his book *The Pronunciation of English*.<sup>3</sup>

Table 1

	Gimson	Jones	Ward
bit	ɪ	i	ɪ
beat	i:	i:	i
bet	e	e/ɛ	ɛ
bait	eɪ	ei	eɪ
bat	æ	a/æ	æ
Bart	ɑ:	a:/ɑ:	ɑ
butt	ʌ	ʌ	ʌ
Bert	ɜ:	ə:	ɜ
pot	ɒ	ɔ	ɒ
bought	ɔ:	ɔ:	ɔ
put	ʊ	u	ʊ
boot	u:	u:	u
beer	ɪə	iə	ɪə
bear	ɛə	ɛə	ɛə
tour	ʊə	uə	ʊə
bite	aɪ	ai/ɑi	aɪ
bout	ɑʊ	au/ɑu	ɑʊ
boat	əʊ	ou	əʊ
boy	ɔɪ	ɔi	ɔɪ
about, mother	ə	ə	ə

Table 1 compares the notations of Gimson, Jones and Ward for RP. On the left is a set of 'key words', each of which contains a different English vowel (including diphthongs); these vowels have been set into similar contexts (e.g. p-t) as far as possible. In reading the table, we may note the following:—

- (1) Jones uses alternative notations for *bet*, *bat*, *bite* and *bout*, as discussed above.
- (2) Gimson and Ward are almost identical except that Gimson gives (redundant) length marks to the long vowels of *beat*, *part*, *pert* etc.
- (3) Jones achieves greater economy of symbols by treating the following as pairs of vowels, one short, one long:

i	i:	(bit/beat)
u	u:	(put/boot)

3 It appears that this is not a case of Jones changing his mind at some point during his career, because both works have run concurrently through a large number of editions and reprintings over a period of 60 years.

	ɔ	ɔ:	(pot/port)
	ə	ə:	(apart/pert)
and sometimes	a	a:	(pat/part), though these

two differ so greatly in quality that Jones was never entirely happy about taking them as a pair.

In devising a notation for N.Z. English we preferred to follow the principle of "one sound, one symbol" rather than aim for economy of inventory. We felt that the advantages of Jones' pairs in achieving economy are outweighed by the disadvantages entailed, viz., the implication that the paired vowels are phonologically related to each other, which they are not (there is only *phonetic* similarity), and the doubtful nature of some pairs, e.g. a/a: and ə/ə: (why should /ə:/ (*pert*) be paired with /ə/ (*apart*) rather than with /ʌ/ (*butt*)?). Gimson's length marks are redundant if the system is to be used by native speakers, so there was no point for us in following Gimson here rather than Ward. There is an additional objection to the use of length marks for the vowel of *beat*, which will be mentioned in connection with differences between NZ and RP (see below).

For these reasons, then, we based our system on that of Ward, who gives relative emphasis to principle (b) above. We have adopted two further principles, one minor, viz.: where possible, we have kept to Gimson/Ward symbols so that students reading these texts would not be entering unfamiliar territory; the other more important, viz., in the method of denoting diphthongs.

Diphthongs present something of a problem because although they consist phonetically of two sounds, or rather of a glide from one articulatory position to another, they nevertheless behave and are felt as single, unitary elements (i.e. *phonologically*, they are units).<sup>4</sup> Some notations, e.g. that of Pike (1947), recognise this phonemic unity by assigning one symbol only, so that *bait* is transcribed /bet/ (*bet* is /bɛt/. Most notations, however, including J/G/W, use a double symbol, e.g. /eɪ/ for *bait*, which is intended as a sort of digraph. Proponents of this method argue that it is quite acceptable to use /e/ for *bet*, /ɪ/ for *bit* and /eɪ/ for *bait* (even though *bait* is not the sum of *bet* and *bit*) since the sequence e + ɪ is never found in English and thus the notation /eɪ/ cannot give rise to ambiguity. They have to explain, however, that the symbol /eɪ/ is intended to represent a single phoneme; and although this digraphic symbol gives more phonetic information than Pike's /e/, it still cannot indicate one important phonetic fact, viz. that the diphthong is falling – the first part is more important than the second.

The use of a superscript notation, e.g. /e<sup>ɪ</sup>/, which we have adopted, overcomes both these problems: it indicates the greater prominence of the first part, and, more important, it clearly shows the phonemic unity of this phonetic sequence. Superscripts have occasionally been used by others before: Pike (1947) uses them for the vowels of *bite* and *boy* (/ba<sup>i</sup>t, bɔ<sup>i</sup>/), but for reasons of his own he does not extend this to the other diphthongs.

One further point is worth noting: those who adopt the 2-symbol notation for most diphthongs (e.g., J/G/W) are not pursuing a strictly consistent policy, because they all transcribe *beat* and *boot* with single symbols (i, u, or i:, u:), while acknowledging that in fact these vowels are pronounced with a diphthongal glide in RP. There are historical reasons for this treatment – the vowels concerned have become diphthongized only fairly recently – but in a synchronic description, internal consistency is more important than historical considerations. Why, then, are *beat* and *boot* given unit symbols? If /bɔɪ, baɪt, beɪt/ are used for *boy*, *bite*, *bait*, why isn't *beat* treated similarly? The reason is that the choice of symbols becomes very awkward, because the end-point of the glide in *beat* is similar to that in *boy*, *bite*, and *bait*, while the starting-point is close to the vowel of *bit*. The logical choice for *beat* would thus be /bɪɪt/, but this of course is impossible because it means either that *beat* is a reduplicated version of *bit*, which it is not, or that ɪ has two different values, which is difficult to explain. To overcome this problem the end-point of all the front closing diphthongs could perhaps be symbolized by i, so that *boy*, *bite*, *bait*, *beat* are /bɔi, baɪt, beɪt, bɪit/. For a transcription of

4. Many American linguists, esp. Bloch, Trager and Smith and their successors, treat diphthongs as a phonological, as well as a phonetic, sequence, identifying the end point of the glide with the semi-vowels j, w, h. e.g. *bite* is /bajt/. We do not like this analysis, for a number of reasons too complex to deal with here.

RP, this solution would be neater and more consistent than the ones currently employed, but it will not work for NZ English (see below).

Having discussed some of the basic principles of transcription, we can now go on to consider differences between NZ and RP pronunciations.<sup>5</sup> Many of the differences between the two are actually of no consequence for transcription purposes; New Zealanders for example pronounce *bit*, *bet* and *bat* quite differently from RP (with closer and/or more centralized realisations) but the system of phonemic contrasts remains the same, so the same symbols can be used.<sup>6</sup> Such differences as these fall into Wells' (1970) *realisational* category. It is only when we have (in Wells' terms) *systemic* or *distributional* differences that the notation is called into question.<sup>7</sup>

One major difference between NZ and RP involves the close front vowels (diphthongs) discussed above. In RP, the final vowel of such words as *tragedy*, *windy*, *company* (normally spelt with -y) is transcribed with /ɪ/, i.e., the same vowel as in *bit*. NZ speakers however feel strongly that this vowel should be equated with the vowel of *beat* rather than of *bit*, so (using Ward's notation) the words in -y would be transcribed with /i/. Phonetically, the vowel in question is a short, pure (i.e. non-diphthongal), close front vowel, [i], and thus differs both from the vowel of *beat* which is diphthongal, and from that of *bit* which is (approximately) a half-close central vowel [ɨ] (see figure 1). It is, however, felt to be associated with /i/ rather than with /ɪ/. In a notation for NZ we therefore need a symbol which will represent both -y and *beat* with reasonable phonetic accuracy. A symbol involving a length-mark (e.g. /i:/) or diphthongization (e.g. /ɪ<sup>i</sup>/) would be approximate for *beat* but not for -y. The symbol /i/ avoids both these disadvantages and has therefore been adopted; *beat* is /bit/, -y is /-i/, *bit* is /bɪt/.<sup>8</sup> The parallelism between *beat* and the other front closing diphthongs in *boy*, *bite* and *bait* has unfortunately been lost in adopting this solution (just as it has been in J/G/W's notations for RP), but this seems to be unavoidable.

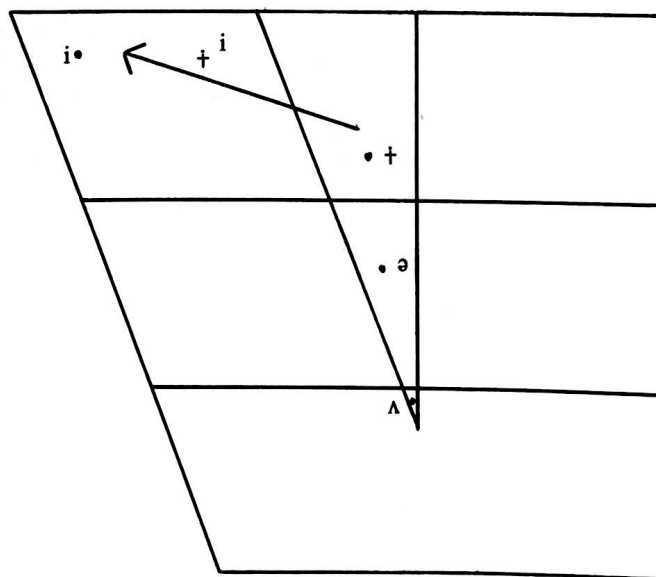


Figure 1

Positions of N.Z. vowels in *bit* [ɨ], *beat* [ɪ<sup>i</sup>], and -y [i]; also of vowels in *about* [ə] and *butt* [ʌ].

- 5 I am assuming that there is such a thing as "a N.Z. accent". I have mentioned elsewhere (Hawkins in press): (a) that there is a characteristically New Zealand pronunciation; (b) that this accent can vary along a continuum from 'broad' to 'modified', rather as Turner (1966) suggests for Australian English; (c) that the 'modified' end approximates RP, which is regarded by New Zealanders as the standard accent even though it is used only rarely; and (d) that there is little regional variation of any significance within New Zealand.
- 6 Unless, that is, one demands that one's notation should have a high degree of phonetic precision; if NZ vowel phonemes are to refer to Cardinal values, then /bet/ will be acceptable for *bet*, but /bɛt/ will not. Phonetically, *bit* is [b ɨ] where [ɨ] represents a close central vowel), *bet* is [bɛt] and *bat* is [bɛt].
- 7 A detailed comparison of NZ and RP in these terms can be found in Hawkins (in press).
- 8 Similarly, *boot* is /but/ and *put* is /pʊt/.

The second major difference between NZ and RP is in the status of /ə/. /ə/ has not been clearly established as a phoneme even in RP, the main problem being that it occurs only in unstressed syllables and therefore cannot be in minimal-pair contrast with /ʌ/, which occurs only when accompanied by some degree of stress. Nearly-minimal pairs such as *hiccough* /'hɪkʌp/ and *syrup* /'sɪrəp/, *humdrum* /'hʌmdrʌm/ and *conundrum* /kə'nʌndrəm/ have been adduced in support of a number of arguments favouring the retention of /ə/ as separate from /ʌ/ (see Jones 1950; Wells 1970), and most descriptions of RP seem to adopt this solution. One thing is certain: there is no difficulty in contrasting /ə/ with /ɪ/, since there exist minimal pairs of a variety of types such as:

city/sɪtɪ/	vs	sitter/sɪtə/
boxes/bɒksɪz/	vs.	boxers/bɒksəz/
batted /bætɪd/	vs.	battered /bætəd/
illusion /ɪluːʒən/	vs.	allusion /əluːʒən/

In NZ, however, the separate status of /ə/ is complicated by the phonetic proximity to it of /ɪ/, which is realised as a central vowel [+]. /ɪ/ stands in contrast with /ʌ/ as close central vs. open central (see figure 1), there being a large number of minimal pairs of the type *bit* /bɪt/ vs. *butt* /bʌt/. The problem arises in unstressed syllables, where no difference between /ɪ/ and /ə/ can be perceived. Students who are introduced to /ɪ/ and /ə/ with examples like *bit* and *about* are uncertain how to deal with, for example, the last two syllables of *mountainous*, which could have either /ə/ or /ɪ/ in both, giving four possibilities /-tɪnɪs/, /-tɪnəs/, /-tənəs/, /-tənɪs/. Since unstressed syllables containing /ə/ or /ɪ/ are of very high frequency in English (about 15% of all phonemes in continuous text), the problem is a sizable one. It involves, among many other purely lexical items such as *mountain*, such grammatical morphs as plural (in nouns) and third-person singular (in verbs) when they occur after sibilants (e.g., *hisses*, *houses*, *watches*, *bridges*, *splashes*), and past tense after /t, d/ (e.g. *waited*, *waded*). Minimal pairs distinguishing /ɪ/ from /ə/ in RP are lost in NZ, for two different reasons: (1) the *city:sitter* type, although still distinguished in pronunciation, no longer involves /ɪ/; in NZ, *city* is /sɪti/ not /sɪtɪ/; (2) the other pairs mentioned above, such as *boxes:boxers*, are not distinguished in pronunciation and are therefore subject to the same uncertainty as *mountainous*, above.<sup>9</sup>

As a result, /ə/ cannot be established as a separate phoneme for NZ English. The question then is whether it can be dispensed with altogether. Let us see what happens; in the first place we need /ɪ/ and /ʌ/, which are clearly established as phonemes by minimal pairs like *bit*, *butt*. But if we work with only these two, we still encounter uncertainty in unstressed syllables, because *mountainous* could now be transcribed with /ɪ/ or /ʌ/, giving /-tɪnɪs/ or /-tʌnʌs/ or permutations of these. At one time we used the symbol ə instead of ʌ, so that *butt* was /bət/; but this only amounted to a change of symbol, and the uncertainty of ɪ vs. ə remained.<sup>10</sup>

The conclusion is that /ə/ could be dispensed with in transcriptions of NZ English (we have tried this and it works satisfactorily) but in practice we have retained it, for the not very

9 It is interesting to observe that this problem of /ɪ/ vs. /ə/ in unstressed syllables is not confined to N.Z. English but occurs also in RP, even though phonetically the realisations of /i/ in RP are closer and more fronted. Thus Jones (1967: para. 150): "/ə/ is used by many [speakers of RP] in prefixes and suffixes like be-, re-, pre-, less-, -ness-, -est-, where the more usual southern pronunciation has /ɪ/ . . . The forms with /ɪ/ are probably the more usual in the South, but the pronunciation with /ə/ seems to be gaining ground." And in para. 82: "/ə/ is an alternative to /ɪ/ in [the penultimate syllable of] words like *ability*, *policy*." All these examples are subject to uncertainty in N.Z. too; the prefixes be-, re-, pre- are, in addition, occasionally transcribed with /i/. The interesting thing is, however, that for many RP speakers the 'psychological distance' between /ɪ/ and /ə/ makes them aware that two distinct pronunciations are involved, as Jones implies; they can hear the difference between /bɪ'twɪn/ and /bə'twɪn/ or /'spɑɪnɪs/ and /'spɑɪnəs/; but for NZ speakers there is no psychological distance between /ɪ/ and /ə/ here; they are not aware of, and cannot hear (unless phonetically trained), two distinct pronunciations. A nice illustration of this point was provided recently by a local choir which was rehearsing a work that included the words *manifest*, *perceptible*, *family*. The conductor, who was English-trained, asked the choir to sing /'mænɪfest, pə'septɪbəl, 'fæmɪli/ with /ɪ/ in the penultimate syllable instead of the normal /ə/. The choir, of course, not being ear-trained phoneticians, could not distinguish the two pronunciations, and went on singing /'mænəfest/ etc. as before.

10 Recent theoretical developments in phonology have thrown some light on this kind of problem. Followers of the Prague school would describe it as a case of neutralization (the contrast between /ɪ/ and /ʌ/ is neutralized in unstressed syllables); in distinctive feature terminology, the unstressed vowels

compelling reason that ə will be encountered frequently in descriptions of RP and other accents of English (including American ones) and in the literature generally. The symbol is needed in our transcription anyway, as the end-point of the centring diphthongs /i<sup>ə</sup>, e<sup>ə</sup>, u<sup>ə</sup>/ (see below), so that nothing is lost by using ə for other purposes.

The notation we have devised for these centring diphthongs as in *beer*, *bear*, *tour*, requires a brief comment. The starting-point for *beer* is closer and more fronted in NZ than in RP, so that the symbol i is needed, rather than ɪ which J/G/W use for RP. The notation ɪə tends to be unintelligible to New Zealanders, since, as we have shown, ɪ is a central vowel and is not distinguished from ə. ɪə would thus be interpreted as a sound gliding to itself. For similar reasons, *tour* is u<sup>ə</sup> rather than v<sup>ə</sup>.

The starting-point of *bear* is correspondingly closer than for RP, so that e<sup>ə</sup> (with reference to Cardinal 2 [e]) is more appropriate than J/G/W's eə.

The end-point of the closing diphthongs in *bait*, *bite*, *boy* is in NZ a relatively close front vowel which must be associated with i rather than ɪ. Our notation for *bait*, /ɛ<sup>i</sup>/, thus differs completely from Ward/Gimson's eɪ, since the starting-point is more open (nearer to C3), hence ɛ – this is a purely realisational difference – and the end-point is closer and more fronted, hence i rather than ɪ. The latter involves more than just realisation, since we are associating the sound with the vowel of *beat* and -y rather than with *bit* as J/G/W do.<sup>11</sup> Similarly, the end-point of the back-closing diphthongs is u not v.

We have represented the starting-point of *bite* as ɔ rather than a, since it is phonetically closer to C5 [ɔ] than the C4 [a]. We have tried to use phonetic approximation to the Cardinal vowels where possible, thus keeping to principle (d) above. The exception is our notation for *boat*, for which ʌ<sup>u</sup> would be more accurate, since the starting-point is generally (in 'modified' NZ) a half-open central vowel similar in sound to the [ʌ] of *butt* (in 'broad' NZ it may be even more open and fronted, [ã]). Our retention of ə<sup>u</sup>, however, preserves a correspondence with Gimson's əv.

A complete list of our transcription symbols is given below (Table 2). Obviously, the system is not definitive in any way, and a number of problems have been raised for which alternative transcription solutions are possible. Our system is heavily dependent both on the notations and by others and on our analysis of NZ English, which may not be accurate. However, the notation works quite well in practice, and the principles of one sound ≡ one symbol, and phonetic approximation to Cardinal values – principles (b) and (d) above – to which we have given priority, have been found useful for students beginning linguistics courses, who are not yet quite clear about the difference between phonetics and phonemics.

Table 2  
The phonemes of NZ English: The Hawkins-Holmes system

Vowels			Diphthongs		
/i/	/bit/ /sɪti/	beat, city	/ɛ <sup>i</sup> /	/dɛ <sup>i</sup> t/	date
/ɪ/	/bɪt/	bit	/ə <sup>u</sup> /	/də <sup>u</sup> t/	dote
/e/	/bet/	bet	/ɔ <sup>i</sup> /	/bɔ <sup>i</sup> t/	bite
/æ/	/bæɪt/	bat	/a <sup>u</sup> /	/ba <sup>u</sup> t/	bout
/ɑ/	/pɑt/	part	/ɔ <sup>i</sup> /	/bɔ <sup>i</sup> /	boy
/ɒ/	/pɒt/	pot	/e <sup>ə</sup> /	/be <sup>ə</sup> /	bear, bare
/ɔ/	/pɔt/	port	/i <sup>ə</sup> /	/bi <sup>ə</sup> /	beer
/ʌ/	/bʌt/	butt	/u <sup>ə</sup> /	/tu <sup>ə</sup> /	tour

could be regarded as distinctively *central* but not distinguished by tongue height, whereas the vowel of *bit* would be distinctively *central* and *close*, the vowel of *butt* distinctively *central* and *open*. Notice that the situation here is parallel with that of plosives after /s-/ word-initially, where *steam*, for example, could theoretically be transcribed as /st-/ or as /sd-/; but in this case the problem normally lies unnoticed, because of the strong orthographic tradition favouring /st-/. In the case of /ɪ/ vs. /ə/ however there is no orthographic tradition to hide the problem.

11 Note that Jones' i means ɪ, i.e., he uses i where Ward/Gimson use ɪ. Jones' i is therefore quite different in meaning from our i, as the foregoing discussion will, I hope, have made clear.

**Vowels**

/ʊ/	/pʊt/	put
/u/	/bʊt/	boot
/ə/	/bʌtə/ /əpɑt/	butter, apart
/ɜ/	/pɜt/	pert

**Consonants**

/p/	/pæ̃t/	pat	/m/	/mɑk/	mark
/b/	/bæ̃t/	bat	/n/	/net/	net
/t/	/tɔ̃t/	tot	/ŋ/	/rɪŋ/	ring
/d/	/dɑk/	dark	/l/	/liv/	leave
/k/	/kæ̃t/	cat	/r/	/red/	red
/g/	/gɛ̃t/	gate, gait	/w/	/wɑ̃n/	wine
/f/	/fɪ̃t/	fit	/j/	/jɑd/	yard
/v/	/və̃t/	vote	/h/	/hɛ̃t/	hate
/s/	/sɛ̃k/	sake	/tʃ/	/tʃɪn/	chin
/z/	/zil/	zeal	/dʒ/	/dʒɪn/	gin
/θ/	/θɪn/	thin			
/ð/	/ðɛn/	then			
/ʃ/	/ʃɪn/	shin			
/ʒ/	/meʒə/	measure			

**Note:** The symbols tʃ, dʒ (*chin, zin*) are intended as digraphs, not as the sequences t + ʃ, d + ʒ. We have kept to the British tradition here rather than the American, which uses the symbols č, ž for these two phonemes. tʃ and dʒ, like diphthongs, are units phonemically but complex phonetically.

**Bibliography**

- Bloch, B., & G.L. Trager, 1942. *Outline of Linguistic Analysis*. Baltimore, Linguistic Society of America.
- Gimson, A.C., 1962. *An Introduction to the Pronunciation of English*. London, Arnold.
- Hawkins, P.R. (in press). "The Sound Patterns of New Zealand English", in *Proceedings of the XV AULLA Congress*.
- Jones, D., 1950. *The Phoneme: its nature and use*. Cambridge, Heffer.
- 1960. *An Outline of English Phonetics*. 9th ed. Cambridge, Heffer.
- 1967. *The Pronunciation of English*. 4th ed., reprint. Cambridge, University Press.
- Lyons, J., 1968. *Introduction to Theoretical Linguistics*. Cambridge, University Press.
- Pike, K.L., 1947. "On the phonemic status of English diphthongs". *Language* 23.
- Trager, G.L., & H.L. Smith, 1951. *An Outline of English Structure (Studies in Linguistics, Occasional Paper No. 3)*
- Turner, G.W., 1966. *The English Language in Australia and New Zealand*. London, Longman.
- Ward, Ida C., 1948. *The Phonetics of English*. 4th ed. Cambridge, Heffer.
- Wells, J.C., 1970. "Local accents in England and Wales". *Journal of Linguistics* 6:231.