THE MARKING OF TENSENESS IN THE SPELLING
OF ENGLISH VOWEL SOUNDS

The spelling system of English is a complex one, especially as regards the vowel sounds. Apart from the fact that there are many more vowel sounds than vowel letters, an important reason is that English spelling is very conservative: changes in pronunciation tend not to be accompanied by corresponding changes in spelling. Also, loanwords usually keep their original spellings: indeed one can argue, as Albrow (1972) has done, that words are spelt not according to a single system but to one of two systems depending on whether a word is of 'native' or Latin origin. Moreover, there are so many exceptions to basic spelling rules, that there may seem to be very few rules that are worth stating at all. On the other hand it can be argued that spelling is difficult not because there are so few rules, but because there are so many. Exceptions to a rule very often have something in common, on the basis of which a further rule or 'sub-rule' may be postulated, and spellings often depend on such matters as phonetic context and aspects of morphology.

One of the most important matters for an understanding of how the orthography works is how tense vowels are distinguished in writing from lax ones. It will be argued that lax vowels can be considered as the orthographically 'unmarked' forms, while tense ones are 'marked' as such in one of two ways -on the basis of syllable division and by the use of digraphs. Firstly though, certain points should be noted. The term 'tense' will be used to refer to / eɪ iː aɪ aʊ juː uː /, while 'lax' refers to / æ e ɒ ʊ / and stressed / ɪ ʔ. / ə ? and unstressed / ɪ ? are not to be regarded as lax vowels but as reduced ones, which are quite different both phonologically and orthographically. Note also that this paper is based on standard British (non-rhotic) English. I shall begin by explaining how the spelling of vowels in the majority of words is related to syllable division -i. e. the syllabic structure of words, in terms of open syllables (ending in a vowel) and closed ones (ending in a consonant). Syllable division is as important in the orthography as in the phonology, although there are differences. The concept of 'marked' versus 'unmarked' will be returned to later.

Two principles will be assumed concerning *spoken* English: firstly, an intervocalic consonant is part -specifically the 'onset' -of the following syllable. In the case of consonant clusters, as many elements are part of the following syllable as can occur word-initially. For example / st / and / str / can occur word-initially and therefore syllable-initially, whereas / nd / cannot. The words 'pastry' and 'window' thus have the syllable structures / peɪ$trɪ / and / wɪn$dəʊ / respectively. Clusters such as / st / will be called 'onset-type', and those such as / nd / 'non-onset-type'. Secondly, although tense vowels often occur word-finally, in which case the syllable is by definition 'open', lax ones never do. In monosyllables and all final syllables, lax vowels are always followed by at least one consonant, and such syllables are therefore 'closed'.

It will be shown that the *orthography* operates in accordance with these two principles, and also with certain logical extensions of them, which can be tentatively stated as follows: firstly, lax vowels occur in closed syllables, whether the latter are final or not. Secondly, tense vowels, by contrast, occur in open syllables -again, whether these are final or not. While this difference between lax and tense vowels is traditionally reflected in dictionaries, Kreidler (1989: 85) dismisses it as mere "printers' conventions" by which people "have been misled … into thinking that there is a similar difference of syllable division in speech." Pulgram (1980: 100) also remarks that "orthographic syllabation is usually irrelevant, especially in English, where it seems chaotic." However, as Kreidler himself points out, "a dictionary provides information about how a written word should be syllabified" (1989: 84). Such information may or may not be relevant to speech, but presumably the "conventions" were based on observations of how the orthography operates. Since in this paper the focus is on spelling rather than on phonology, the "conventions" will be accepted. Indeed, one of the present purposes is precisely to show that this *is* how the orthography operates. Let us see how it is done. Consider the words / plæn / and / pleɪnɪŋ /. If the orthography operates on the assumption that lax vowels occur in phonologically closed syllables, while tense vowels occur in phonologically open ones, the words / plæn / and / pleɪnɪŋ / and their spellings hold no surprises. / plæn / is a closed syllable containing a lax vowel and is spelt "plan", while the first syllable of / pleɪnɪŋ / is open and contains a tense vowel and the word is spelt "planing" - "a" being of course the main spelling of both / æ / and / eɪ /.

However, when we try to spell such words as / plænɪŋ / and / pleɪn /, the above 'assumption' breaks down. The phonological syllable structure of / plænɪŋ / is / plæ$nɪŋ / -the first syllable being open although the vowel is lax. The word is not spelt "planing", since this, as we saw just now, is the spelling of / plænɪŋ / in which the first vowel, occurring in an open syllable, is the tense sound / eɪ /.

The spelling strategy for avoiding such potential homography is to make the phonologically open syllable *orthographically closed,* and this is achieved by the simple method of geminating, i. e. doubling, the consonant letter. Thus, / plænɪŋ / is spelt "planning", the orthographic syllable structure being "plan $ ning" (i. e. one "n" being part of the spelling of each syllable). Gemination is a neat device for establishing orthographic syllable division, since a double consonant is non-onset-type, i. e. it never occurs word-initially and therefore not syllable-initially either, neither in pronunciation nor in spelling.

Conversely, / pleɪn / (as in 'aeroplane') is, phonologically, a closed syllable although the vowel is tense. It is not spelt "plan" since this is the spelling of / plæn / in which the vowel, in a closed syllable, is lax. The spelling strategy here is to make the syllable orthographically open, by adding a 'dummy' silent vowel letter after the "n", namely "e". (This device is a historical leftover from Old English although the function of the "e" has totally changed). Lax and tense vowels are by no means the only vowel sounds of English. Others include /aː ɜː ɔː/, which will be called 'heavy' (in preference to the ambiguous term 'long'), and /eə ɪə aɪə jʊə ʊə/, which will be called 'r-tense' (this label will be commented on below). What the sounds

in these two groups all have in common is that their spellings usually include the letter "r" (almost always in the case of / ɜː / and r-tense vowels). (Note that all the sounds I mention must be considered as 'indivisible' units as far as spelling is concerned. Even the spelling of the triphthong /aɪə/ usually consists not of a spelling of /aɪ / plus a spelling of /ə/, but of the sequence "ire").

The interesting point here is that r-tense vowels are distinguished from heavy ones in just the same way as tense vowels are from lax ones. It should be borne in mind that, in talking about spelling, the important distinction is between orthographically open and closed syllables, and that the letter "r" is a consonant letter; the fact that it is often silent in non-rhotic dialects such as RP is irrelevant. Heavy / ɑː / occurs in orthographically closed syllables, so that / stɑː / and / stɑːrɪŋ / are spelt "star $" and "star $ ring". By contrast, r-tense / eə / occurs in orthographically open syllables, so that / steə / is spelt "sta $ re" (with the "e" creating an extra orthographic syllable, leaving "a" in an open one), and / steərɪŋ / is spelt "sta $ ring" (without the geminate that we write in 'starring'). The reason for the label 'r-tense' should now be clear: such vowels are spelt with an "r", whether the latter is pronounced or not, and they are handled as tense rather than lax by the orthography. Further references to tenseness apply as much to them as to / eɪ iː aɪ əʊ juː uː /.

Recognition of what I call the 'syllable-division principle' as I have described it, appears to be less than universal. To take just one example, Williamson (1980: 560) says that "to teach that short vowels appear in closed syllables and long vowels appear in opened syllables is to demonstrate an ignorance of linguistic phenomena. ... the use of silent e in many other functions makes it useless to memorize that a final, silent e means a long vowel is in the word or syllable." This is nonsense. Marking of tenseness is not the only function of final "e", but it *is* one of its main ones. Most words are spelt in accordance with the syllable-division principle, and this involves mute "e" if the tense vowel is in a phonologically final syllable. To summarise, then, the basic principles of orthographic syllable division are as follows. A lax or heavy vowel occurs in a closed syllable: if the syllable is phonologically open, the consonant letter is geminated so that the syllable is orthographically closed and the vowel will be read as lax or heavy. Conversely, a tense or r-tense vowel occurs in an open syllable: if the syllable is final and phonologically closed, then final mute "e" is written, thus creating an extra orthographic syllable so that the one before it is orthographically open and the vowel will be read as tense or r-tense.

Note that space limitations prevent many relevant aspects of spelling from being dealt with in this paper. One of these is ambisyllabicity: let it be simply mentioned in passing that gemination is an even neater device for establishing orthographic syllable division than was implied earlier, if one accepts that the / n / in / plænɪŋ / for example is ambisyllabic. This may be an appropriate point at which to comment on the classification of vowels that has evolved during the research that underlies this paper. If one is investigating the spelling patterns of English speech sounds, rather than the nature of the sounds themselves, it seems logical to classify them according to the orthographic patterns that they exhibit, rather than according to strictly

phonetic criteria as other authors tend to do -even Carney (1994), in what is probably the best description of the orthography published so far. The classification of the majority of vowel sounds into four groups is based on observation of spelling patterns as reported above, and it is illustrated in Table 1 below. Decisions as to which vocalic elements and sequences thereof are to be regarded as 'vowel sounds' (in the sense of basic units for spelling purposes) are also orthographically based. Five further vowel sounds need to be recognised as such, but as they do not belong in the four groups discussed so far, mention of them will be left until later.

In the table, all the sounds in each column may be regarded at least for the moment as being typically spelt with the vowel letter at the top. (Examples of / ɜː / appear in three columns, partly because all three spellings are frequent, and partly to highlight the "her / here, fir / fire, cur / cure" contrasts).

Table 1

	A	*E*	*I*	*O*	*U*	*U*
Lax	æ plan planning	e met better	ɪ fin window	ɒ hop hopping	ʌ nut nutty	ʊ push pulley
Tense	eɪ plane planing	iː mete meter	aɪ fine final	əʊ hope hoping	juː nude nudist	uː rude rudely
Heavy	aː star starring starting	ɜː her preferred tern	fir stirred flirt	ɔː for fort	cur occurred turning	
R-tense	eə stare staring	ɪə here revered	aɪə fire fired		jʊə cure cured	ʊə sure

There are however many words in which tenseness is not marked by syllable division, as we shall see now. The adjective 'plain' and the verb 'hear' should, according to the syllable-division principle, be spelt with a final "e" in order for the tense and r-tense vowels to occur in orthographically open syllables. Such examples are in fact spelt according to a spelling principle that is different and independent from syllable division. They are each spelt with a vowel digraph and the requirement for the syllable to be orthographically open simply does not apply in such cases.

Syllable division and digraphs are two different ways of doing the same thing -but not so different as may at first appear. Indeed, although the two *principles* are admittedly different and independent, the ways in which they are *applied* are very similar, as will be apparent from the following brief account of tense-vowel spellings in general. A letter representing a non-final tense vowel, or an r-tense one, is almost always marked as doing so by the presence of an-

other vowel letter, whether the latter be pronounced or silent. (The vowel letters will be called V1 and V2 respectively). Such marking of tenseness is achieved in one of two ways:

1. - V2 can follow a single consonant letter or onset-type cluster, which itself follows V1, and thus, in accordance with the syllable-division principle explained earlier, make V1 occur in an orthographically open syllable so that a reader will interpret the vowel as probably tense or r-tense (as in the noun 'plane' and the adverb 'here'); or else
2. - V2 can occur *immediately* after V1, thus forming a vowel *digraph,* in which case V1 is again to be interpreted as probably tense or r-tense (as in the adjective 'plain' and the verb 'hear'), and syllable division is simply to be regarded as irrelevant.

Note that the existence of two different methods of marking tenseness -i. e. orthographically distinguishing tense and r-tense vowels from lax and heavy ones- has two important effects. For the writer, it is impossible to predict reliably which is the correct method for spelling a given word. For a reader however, many pairs of words are homophones instead of homonyms, for example the two words pronounced / pleɪn /. The existence of more than one digraph spelling of a sound heightens both effects: a writer must learn three different spellings of / veɪn /, while for a reader the three words pronounced / ve n / are distinguished from each other. One can argue that there is a third possible position for the so-called V2, namely *before* V1. Seen in this light, the "ei" digraph in the word 'height' is more or less regular in so far as the "e" marks the "i" as representing the sound / aɪ /, except that V2 simply *precedes* V1 instead of following it as it usually does. Note that in the case of the word 'either', the / 'iːðə / pronunciation corresponds to the letter "i" marking the preceding "e" as tense / iː /, while the equally acceptable / aɪðə / pronunciation corresponds to "e" marking the following "i" as tense / aɪ /. As for the "ie" and "ei" spellings of / iː /, one might also rephrase the much-quoted spelling rule "i before e except after c", and say "V2 before V1 except after c". Although this analysis may be considered to be of limited usefulness since examples are not very numerous, it enables one to consider certain spellings as less irregular than they would otherwise seem, and the search for patterns is after all an important part of scientific study. Note that such spellings are not the only type of 'back-to-front' ones occurring in English either. "Wh", sometimes pronounced / hw / but never / wh /, is another example of such orthographic metathesis. One might say that while a vowel letter usually 'post-marks' a previous one, as in 'grate', it can also 'pre-mark' a following one, as in the homophone 'great'. The above account has concentrated on final syllables. Most of it also applies to non-final syllables, although digraphs are only frequent in morpheme-final syllables, as in 'feast.ing, acquaint.ance'. They are rare elsewhere. Incidentally, if the digraph is followed by a single consonant or onset-type cluster, plus a vowel, such spellings do not in fact contravene the syllable-division principle. The syllable structure of 'feasting' for example is 'fea $ sting'.

In the context of an overall "V1-V2" analysis of tense-vowel spellings, which neatly brings the syllable-division principle and use of digraphs under one umbrella, the role of gemination should be somewhat rephrased. In "planing", the letter "i" is the V2 marking "a" as tense, but

in "planning", the same letter "i" also occurs. To ensure a correct reading of "planning", one must specify that a geminate (which as explained earlier makes an orthographic syllable closed) acts as a barrier between V1 and V2, blocking or cancelling the tense-marking effect of a V2. There are hardly any exceptions to the rule that a vowel followed by a geminate is lax or heavy. A non-onset-type cluster, as in 'window', is also such a barrier although less reliable: the orthographic syllable structure of 'stranger' for example wrongly suggests a lax vowel.

Despite all that has been said or implied above, about digraphs as an alternative spelling principle co-existing with the syllable division one, it must be said that digraphs occur in a minority of cases, and since, as mentioned earlier, no reliable guidelines exist for choosing between the two principles, digraphs must be regarded in general as irregular, although less so than in the case of lax vowels (which, rather confusingly, are sometimes also spelt with digraphs). On the other hand, the minority is a rather large one, at least in final syllables, and therefore cannot be ignored. Moreover, / i: / is predominantly spelt "ee", and digraph spellings of other sounds are frequent in certain contexts. One such context is important. A word-final vowel, if stressed and written without an "r", can be fairly safely assumed by a reader to be tense, since lax vowels never occur word-finally. It should therefore not be necessary for the spelling to include a V2. However, a final tense vowel is nearly always spelt with a vowel digraph, as in 'play', if the word is lexical (except that / aɪ / is spelt with just a "y" if preceded by at least two other letters). This double marking of tenseness, i. e. position in an open syllable and use of digraph, is clearly redundant in terms of distinguishing between tense and lax vowels, but in fact it is not always completely redundant: it often shows that a word is lexical, and / or shows that the syllable has primary stress, and / or distinguishes homophones which otherwise would be homonyms. The double "e" in the noun / bi: / for example, contrasting with the single "e" in the verb / bi: /, serves all three functions. It is worth pointing out that the vowel classification, as illustrated in Table 1 with syllable-division spellings, is equally valid on the basis of digraph spellings. This is shown in Table 2 below, which gives both types of spellings of tense and r-tense vowels. V1$V2 indicates syllable-division spellings, V1V2 the usual type of digraph ones, and V2V1 the 'back-to-front' ones.

Table 2

		A	*E*	*I*	*O*	*U*	*U / OO*
Tense		eɪ	iː	aɪ	əʊ	juː	uː
	V1$V2	plane	mete	fine	rode	nude	rude
	V1V2	plain	meet meat		road	newt	food
		play	see	tie	roe	due	blue zoo
	V2V1	great	belief	height	yeoman	euphoric	
R-tense		eə	ɪə	aɪə		jʊə	ʊə
	V1$V2	stare	here	fire		cure	sure
	V1V2	stair	hear				tour
	V2V1	bear	pier			Europe	

Note that the case of / uː / is somewhat curious. After certain consonant sounds, it is usually the context-determined de-glided allophone / juː / (compare 'nude' with 'rude' - * / rjuː / does

not occur in English), and it has the same spellings, namely "u" or "ew". It therefore seems logical to consider it as a tense vowel. But it also exists as a separate phoneme homophonous with the vowel in 'rude', and is in such cases usually spelt "oo". The concept of homophonous phonemes may be a somewhat unconventional one, but now compare 'cute' with 'coot'. Incidentally, in the latter case it has to be said that tenseness is not clearly marked, since "oo" is also a spelling of lax / ʊ / -a more frequent one than the letter "u" in fact.

Discussion of the marking of tenseness would be incomplete and misleading if it were not pointed out that in a number of words, such as 'find, post', tenseness is not marked at all, neither by syllable division nor by digraphs. Conversely, in many words with lax vowels there is no geminate to cancel the marking effect of a V2. Some such departures from the spelling principles discussed so far are shown in Table 3 and very briefly commented after it.

<div align="center">Table 3</div>

	A	E	I	O	U	OO
Lax	æ sanity	e head	ɪ liver	ɒ conic	ʌ coming	ʊ looking
Tense	eɪ strange	iː crises	aɪ find	əʊ both		
Heavy	ɑː passing			ɔː crawling fore story four		
R-tense	eə scarce					

Comment on examples in the table.

- LAX VOWELS:

sanity: A lax vowel is disguised as a tense one in this example of 'trisyllabic laxing'. When a stressed syllable is ante-penultimate, excluding productive suffixes, the vowel tends to be lax, but the following consonant letter is usually not geminated, especially if the word is a derivative of a word in which the vowel is tense, as in 'sane'.

head: Irregular use of a digraph to spell a lax vowel.

liver: "v" is never geminated.

conic: An example of 'disyllabic laxing', similar to trisyllabic laxing but restricted to derivatives of Latin-based words, e. g. 'cone'.

coming: Geminates do not follow irregular vowel spellings.

looking: Geminates never follow vowel digraphs.

- TENSE VOWELS:

strange: As "ng" is non-onset-type, the preceding vowel is in an orthographically closed syllable, wrongly implying a lax vowel. (The function of the "e" is to mark the pronunciation of the "g").

crises: This Latin plural ending retains its original spelling despite the / iːz / pronunciation.

find: Pronunciation is unclear from spelling but would be no clearer if final "e" were added, since "nd" is non-onset-type.

both: Final "e" would wrongly indicate / ð / instead of / θ / (cf. 'clothe').

- HEAVY VOWELS:

passing: / ɑː / is often spelt without "r". Note however that the "a" spelling is almost always followed by a non-onset-type pair of consonant letters and is thus in an orthographically closed syllable, preventing a tense reading. (One might argue that / ɑː / is in many words an allophone of lax / æ / and spelt accordingly. Such words used to be pronounced with / æ / and indeed still are in several dialects).

crawling: The consonant letter "w", albeit silent, similarly closes the syllable orthographically.

fore, story, four: Although / ɔː / was earlier labelled as heavy, these three spellings show that it is open to argument whether to regard the phoneme as heavy or r-tense. (Merging of / ɔə / with / ɔː / has no doubt been at least a contributory factor here).

- R-TENSE VOWELS:

scarce: A similar case to 'strange': syllable division wrongly implies a heavy reading of "a" as in 'farce', despite the "e" which is a marker of the pronunciation of the "c".

We conclude here the discussion of lax versus tense vowel spellings. One final matter briefly needs mentioning though, in connection with the classification of vowels which would otherwise remain incomplete. There are five vowel sounds to whose spellings syllable division is only marginally if at all relevant, and which thus do not belong in any of the four groups discussed. They are presented in Table 4.

Table 4

	A	E	I	O	U
Diphthongs & Triphth.				/ tɔɪ / toy / aʊ / cow / ʊə / our	
Reduced Vowels	ə drama ɪ cottage	the the	taxi	actor	suppose

The two dipthongs /aʊ/ and /ɔɪ/ are always spelt with digraphs and not according to syllable division. The triphthong /aʊə/ is often orthographically indivisible and spelt "our". (Others consist of diphthongs plus /ə/, and are spelt accordingly -for example, /ɔɪə/ is "oyer"). Two further sounds constitute a split category: these are, as mentioned earlier, the 'reduced' vowels /ə/ (which is never stressed) and unstressed /ɪ/. The above table includes a sample of the spellings of each one. In the case of /ə/, the four spellings given constitute a very small sample. Such is the nature of English spelling: a most curious blend indeed of order and chaos.

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