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UNNATURAL PHONOLOGY IN ENGLISH

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1 Introduction

Phonology is becoming more 'natural'. New schools of Natural Phonology and Natural Generative Phonology (not to be confused with each other) have arisen over the last fifteen years or so, as a reaction against the type of proposals made by Chomsky & Halle in *The Sound Pattern of English* (Chomsky & Halle 1968), and it has become more and more common to formulate phonological arguments in terms of their 'naturalness', or to prefer one argument to another because the solution it presents is more 'natural'. Unfortunately, the term 'natural' as it appears in such statements is not well-defined.

One attempt to define naturalness was made by Schane (1972). His definition was extensive, in the sense that he defined by giving examples of 'natural' processes in phonology. The rules which describe 'natural processes' can be termed 'natural rules'. Natural rules, according to Schane (1972:207) are rules describing processes such as assimilation (including processes such as umlaut and vowel harmony), and rules for maximum differentiation (i.e. rules which specify that a three vowel system is more likely to be [i], [u], [a] than [i], [y], [u], or that the presence of voiced obstruents in a language presupposes the presence of voiceless obstruents). Although this does raise questions on the status of dissimilation (is it unnatural? do we therefore predict that languages will tend to lose dissimilatory processes?), it does have intuitive appeal. Most linguists would probably agree that assimilation is a 'natural' process, one that they would expect to find in language and so on.

One of the other types of process that Schane (1972:207-10) designates as natural is the type of process that leads to a regular alternation of consonants and vowels: cluster simplification, vowel epenthesis, svarabhakti and post-vocalic consonant deletion, for example. Again, this is not without appeal. Many languages in the world, from different language families, maximize open syllables or do not permit closed syllables; children tend to produce open syllables before they produce closed syllables; and every known language has CV syllables, though there are many languages which do not permit more complex syllable structures. It is this kind of process that I wish to consider here with reference to English. In particular, I wish to consider a number of places where English seems, on this criterion, to be a very unnatural language.

2 Data

2.1 *Loan words from Maori*

Maori is a very natural language according to this criterion. It never allows consonant clusters, and never allows word-final consonants. Each syllable is thus analyzable as

(C)V(V)

English has borrowed a great number of words from Maori, not least place names, and has thus had the opportunity of incorporating maximally 'natural' forms. How has it treated them? In many cases it has adopted them as they are (as indeed English tends to do with loan words), although with certain automatic changes in pronunciation which are not relevant here, such as the change in quality of /r/, for example. But in a significant number of words a change has been made. These are words such as *biddy-bid, Paekok, Paraparam, Paratut, Taitap, Waipuk, Wakatip*. In such cases the English form ends in a consonant, and is thus less natural according to this criterion than the Maori word of which it is an adaptation. That is, where English borrows a Maori word, that word is either kept at the same level of naturalness or made unnecessarily less natural. This makes English seem like a very unnatural language.

Note that data from borrowings into Maori, e.g. *hipi* as the borrowing of *sheep*, does not provide any evidence one way or the other, since Maori is constrained to make words 'more natural' on this criterion by its phonological structure. The point is that in English there is a possible choice, and that in a number of cases the variant which, on Schane's criterion, is 'less natural' is the variant which is found. That is, given a

choice, the predicted 'more natural' form does not always occur.

It has been suggested to me that some kind of explanation for the abbreviations in Maori loan words cited above can be found in the phenomenon of tone-group-final vowel devoicing in Maori. It might be that speakers of English, not being used to voiceless vowels, simply did not perceive these vowels, and thought they were borrowing the Maori form. However, the phenomenon of final vowel devoicing is not completely regular but variable, and furthermore this would suggest that these words were only heard in final position. I find this particularly unconvincing in view of the fact that fuller versions are also available in English: e.g. *biddy-biddy*. Furthermore, a /t/ followed by a voiceless vowel tends to sound to the English ear like [tʃ], and yet *Paratut* ends in /t/ not /tʃ/. In any case, such a suggestion would not account for all the examples cited: consider *Paekok*, *Paraparam*, *Waipuk*.

2.2 *Word-formation*

There are two main places where English word-formation provides relevant data for this hypothesis: in clippings and in instances of word manufacture. These will be considered in turn.

2.2.1 *Clipping*

Clipping is the creation of new words by the abbreviation of existing words. The new words usually preserve the meaning and form class of the original, but frequently have a different stylistic value. The first part of the original word can be removed in the clipping process (as in *plane* < *aeroplane*), the last part (as in *exam* < *examination*), or parts of both ends (as in *tec* < *detective*). The most common pattern is to remove the end of the original word, and this is the only pattern which is of relevance here. This is because it is only when deleting the end of the word that the coiner is free to choose whether to have open or closed syllables. Clippings with the beginning of the word removed will thus be ignored in what follows.

It does not appear to be predictable how much will be clipped from the original word if clipping takes place. Nor are there clear tendencies about what syllables are likely to be retained: it is not, for instance, always the case that the stressed syllable of the original word is retained (consider, for example *gym* < *gymnasium*).

Consider now a list of examples. These are taken from Bauer (forthcoming) and Marchand (1969) with meanings as listed in these sources. *Ad* (< *advertisement*), *bi* (< *bisexual*), *binocs* (< *binoculars*), *coke* (< *Coca Cola* [NB: *coke* used as an abbreviation for *cocaine* is not strictly a clipping, since the vowel quality is wrong]), *deb* (< *debutante*), *deli* (< *delicatessen*), *doc* (< *doctor*), *exam* (< *examination*), *gas* (< *gasoline*), *grad* (< *graduate*), *gym* (< *gymnasium/gymnastics*), *jumbo* (< *jumbo jet*), *lab* (< *laboratory*), *math(s)* (< *mathematics*), *medic* (< *medical student*), *memo* (< *memorandum*), *mike* (< *microphone*), *mimeo* (< *mimeograph*), *narc* (< *narcotics agent*), *polio* (< *poliomyelitis*), *porn* (< *pornography*), *pram* (< *perambulator*), *prom* (< *promenade*), *psych* (< *psychology*), *pub* (< *public house*), *quin* (< *quintuplet*), *sarge* (< *sergeant*).

The vast majority of these forms (which I take to be a fairly representative sample) do not conform to the CVCV pattern which Schane says is 'natural'. However, there are a number of reasons for this. One obvious one is that many of them contain 'lax' vowels, which must be followed in English by consonants. However, even where this is the case, it is not clear that it is the only factor that prevents the use of a CVCV pattern.

There does not appear to be any constraint on the number of syllables that may appear in a clipped form, as long as it is fewer than there were in the original. In some of the examples cited above that contained 'lax' vowel + consonant, including an extra syllable in the clipped form would have allowed it to conform to the CVCV 'ideal'. For instance, *coke* might have been clipped as *Coca*; *math* might have been clipped as *mathe*; *gasoline* might have been abbreviated to *gaso*; *porn* might have appeared as *porno*. One possible reason that this does not happen is that a final unstressed vowel, which is usually [ə] or [i], would be taken as being a suffix, and this might impose a reading in which the clipping was morphologically more complex than the base. While this might account for some of the forms, it still does not provide a reason for the non-appearance of *p(e)rambu* or *gymna* [ʤɪmneɪ].

There are also examples which contain tense vowels where it is not the case that a final consonant is obligatory: *coke* (< *Coca Cola*), *mike* (< *microphone*), *narc* (< *narcotics agent*) *porn* (< *pornography*), *sarge* (< *sergeant*). In these cases there is no phonotactic reason why there must be a final consonant. The presence of the final consonant is thus in direct contravention of the expected 'natural' CVCV pattern. The only 'explanation' I can think of for retaining the final consonant in such cases is that it is only in this way that the original word remains

recognizable. If this is the explanation here (and it is not the kind of explanation that is usually given much recognition in generative accounts) it shows at least that the tendency towards the 'natural' CVCV pattern is quite a weak one, one which is relatively easily overruled by other factors.

In another set of cases -- particularly with proper nouns -- an extra vowel suffix is added, so as to provide the CVCV pattern. This suffix is the so-called 'diminutive' suffix *-y* (or *-ie*). Contrast *Fred* (< *Frederick*) and *Phil* (< *Philip*) with *Charlie* (< *Charles*) and *Andy* (< *Andrew*). What I am suggesting here is that if there is some natural tendency towards a CVCV structure in English (a tendency which, I am claiming, is well hidden in many places), the suffix *-y* (*-ie*) may not be a genuine diminutive, but simply a vocalic segment used to give rise to a preferred syllable structure.

While the evidence here is not overwhelming, it does still seem to be the case that any tendency towards a CVCV structure in English is extremely weak.

2.2.2 *Word manufacture*

Word manufacture is the creation of new words *ex nihilo* with no etymology at all. In this pure form it is actually quite rare. Most cases of things which seem like word manufacture are in fact slightly motivated, sometimes from the orthography. Consider, for example, *picloram* from *AMinotrichLORoPIColinic acid* where the groups of letters borrowed from the base have been reversed in the final word. Such cases are, to a certain extent (although admittedly, only to a very small extent), constrained by the source. In genuine cases of pure word manufacture, there are no constraints operating except the phonotactic constraints of English, and the manufacturer is free to create any unambiguous sequence of phonemes. (This is perhaps something of an oversimplification, since the sequence of phonemes must also have an unambiguous orthographic form. Indeed, often it is the orthographic form which comes first in such formations. There are also cases where more general linguistic constraints have to apply, as with the trade name *Exxon*, which had to be checked against all the languages in the areas in which the company operated to make sure it was not a rude word -- compare the problems Rolls Royce had with a potential Silver Mist on the German market, since *Mist* means 'manure' in German. However, this does not basically affect the general argument.)

If it is the case that CVCV structures are preferred structures, structures which are 'more natural' than other structures, one would expect to find more of them than of structures in which C and V do not alternate in instance of word manufacture. Consider, however, the following instances of pure word manufacture listed in Bauer (forthcoming). First there are trade names like *Antron, Dacron, Kodak, Krylon, Orlon* and *Teflon.* The only clear non-commercial words I have found are *grok* 'to communicate sympathetically' (from Robert Heinlein's (1961) novel *Stranger in a Strange Land, wampeter, foma* and *grandfalloon,* (which all feature in the title of a (1974) book by Kurt Vonnegut), *quark* 'sub-atomic particle' and *scag* 'heroin'. Of these, only *foma* adheres to the strict CVCV structure that Schane predicts is 'natural'. Note that in this case the fact that many of the words contain 'lax' vowels which phonotactically must be followed by a consonant is not a relevant argument, since the manufacturer of the words in question was free to choose 'tense' vowels, and could have done so in order to fit the 'natural' pattern.

Again it appears that English prefers structures which are not those defined as 'natural' by this particular criterion.

2.3 *Allegro speech*

According to Stampe (1973), speakers tend to suppress fewer of their 'natural' phonological tendencies when they are speaking quickly than when they are speaking slowly. Lento speech is characterised by a relatively great amount of attention to clarity and precision, but the faster the speech the less time there is to pay conscious attention to such factors, and as a result a number of 'natural' processes occur which would not occur in lento speech. (For a useful summary of Stampe's theory of natural phonology, see von Willer & Yallop, 1981). However, when we consider what actually happens in allegro speech in English, we find that some of the tendencies are far from 'natural' if natural means leading to a maximal CVCV structure. Consider the following examples from Brown (1977), for example. Brown lists several examples where consonant clusters are created by the elision of vowels. Moreover, many of these consonant clusters are ones which would not be acceptable in lento English. Among other examples, Brown (1977:68-74) lists the following:

[fjutʃkeɪrɪə]	< future career
[pɹɛz]	< because
[gəʊbæktwɔmp]	< going back to our map
[bæŋkfɪŋglænd]	< Bank of England
[sɔʊltəpʌblɪk]	< sold to the public
[stɹɔnɹi]	< extraordinary

This seems to imply that, at least under some conditions (which it might be possible to specify in greater detail, although no such attempt will be made here) it is standard for English to have quite complex consonant clusters. This is at variance with Schane's postulated universal 'natural' tendency for CVCV structures to be maximized. Again, in terms of Schane's concept of 'natural', English can be seen to be acting unnaturally.

Of course, there are cases where changes can take place in English which do lead to a more regular CVCV patterning. Examples are [gəlumi] for *gloomy*, [æθəlit] for *athlete* and [fɪləm] for *film*. But these changes (when they are not just dialectal variants) generally take place in lento speech, not in allegro speech (Donegan & Stampe, 1979, where this is referred to as 'fortition'). Yet allegro speech is supposed to be more 'natural' in most ways.

3 Discussion

I have considered four places where English phonological processes do not appear to reflect the so-called 'natural' tendency towards a preferred syllable structure of alternating consonants and vowels. There are a number of things that one might be tempted to conclude from this.

1. It might be that any claims for naturalness as a motivating force in phonology are at best premature and at worst vacuous. On this view, phonological patterns can be occurrent or unattested, but nothing can be said about likelihood.

2. It might be the case that although the tendency towards a CVCV structure is a 'natural' one, English is an 'unnatural' language.

3. It might be that the supposed tendency towards a CVCV structure is not a 'natural' one, and that Schane (1972) was at fault in including it in his list.

4. It might be that the tendency towards CVCV structures is a 'natural' one, and that English is a 'natural' language, but that I have chosen exceptional processes.

5. It might be that there is a 'natural' tendency towards a CVCV kind of structure, even in English, but that this 'natural' tendency is over-ruled by other 'natural' tendencies such as unstressed vowel deletion, assimilation, and even dissimilation.

6. It might be that the so-called 'natural' tendency towards CVCV structures is only 'natural' in some languages, of which English is not one.

Number (1) seems to me to be a rather pessimistic conclusion to draw on the basis of so little data. While further attempts at the analysis of 'naturalness' could lead to this type of conclusion, it would be premature to make firm statements of this kind yet.

Number (5) is a very tempting conclusion. If this is true then research into naturalness must concentrate on answering such questions as: is there a hierarchy of kinds of naturalness? what kinds of 'natural' rules apply in what circumstances?

However, I find myself inclined to accept number (6), even if number (5) is also correct. According to this view, notions of 'naturalness' are not necessarily universal notions, in the sense that they do not necessarily apply equally in all languages. Thus, for example, it might be the case that front rounded vowels are 'unnatural' in general but perfectly normal, or 'natural', in the Germanic languages (compare the development of [œ] and [ʉ] in Australasian English commented on in Bauer, 1979:65). Similarly, while assimilation, for instance, is 'natural' in many languages, including English, if a language is found in which there is no assimilation (and Maori might be such an example, particularly if assimilation is distinguished from similitude, although not enough is known about the phonetics of Maori for us to be sure) it does not necessarily follow that that language is, to that extent, 'unnatural'. Or again, dissimilation, which is rarer across languages than assimilation, is not necessarily 'unnatural' because of that, but might be more natural in some languages than in others.

Similarly, it might be the case that certain features are more 'natural' in certain styles than others. This seems to me to be implied by Donegan & Stampe's discussion (1979:142ff) of fortition and lenition processes. Thus they say, for instance, that fortition processes 'apply in situations and styles where perceptibility is highly valued: attentive, formal, expressive and lento speech' while lenition processes 'apply most widely in styles and situations which do not demand clarity ... or which make unusual demands on articulation (e.g. rapid tempos).'

If this is the case, then Schane's error may not have been in including the tendency towards a preferred alternation of consonants and vowels as a 'natural' one, but rather in failing to specify under what stylistic situations such a 'natural' process was likely to apply, or failing to point out that it may not be equally 'natural' in all languages.

It should be clear, I think, that the concept of naturalness still requires a lot of further qualification. Perhaps further clarification will be easier if it is not assumed that all processes are equally normal in all languages and styles. In this, it can be seen that Stampe's theory of naturalness is far superior to Schane's. Schane simply sets up a claim for a 'natural' process. Stampe allows that 'natural' processes may come into conflict (Donegan & Stampe 1979:129f) and speaks of 'implicational hierarchies of applicability' of 'natural' processes (ibid:138). That is, Stampe allows for variation and exception. While Schane (1972:221-3) is evidently aware of the need for this, he just talks vaguely of 'perceptual strategies' which, he says, account for deletions which 'cannot be attributed to any natural process'. Stampe is starting to show the naturalness inherent in such perceptual strategies, and is so gaining a more flexible system. As a result Stampe's notions of naturalness are better able to cope with apparent unnaturalness than Schane's.

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