

Miklós Törkenczy *Level of generalisation: the role of contrast in an English phonotactic constraint*

0 Introduction

This squib is organised in the following way: In section 1 I will give a brief overview of the role of contrastive and non-contrastive properties of sound in phonological patterns; and in section 2 I describe the data I want to focus on, namely, the patterning of stops and sonorants in word-initial clusters in the Southern British Standard (BrE) and in General American (AmE). Finally, in section 3 I will analyse the data and explain why the pattern seems to present a no-win type of problem for phonological analysis.

1 Contrast

Contrast is perhaps *the* central notion of phonological analysis. In structuralist (taxonomic) phonology, distinctive features, i.e. those features that are capable of minimally distinguishing words (lexical items) with a different meaning (e.g. the place of articulation of nasals in *meat* [mi:t] vs. *neat* [ni:t]), were thought to be the only *phonologically* relevant features.¹ By contrast, redundant (subphonemic/allophonic) features (such as the velarisation (= ‘darkness’) of [ɫ] in *felt*), which can only distinguish allophones (e.g. [l] vs. [ɫ]), but never phonemes, were assumed to be essentially phonetic, and thus irrelevant to (or – to use a later term – inactive in) the phonology.² Later, in early generative phonology it was realised and built into the model that

1 cf. e.g. Twaddell (1935), Hockett (1958), etc. Trubetzkoy (as always) had a more complex view, cf. Trubetzkoy (1939).

2 Of course, they appeared in allophonic statements, but only as part of the description of an ‘output’ allophone and never as part of the description of the input or the conditioning environment.

- (i) contrast is not constant in a system³ because a feature that is distinctive in one environment may be redundant in another (e.g. the place of articulation of English and Hungarian nasals is non-contrastive before stops within the morpheme, but is contrastive before vowels); and
- (ii) some phonological processes may not be described in a uniform way if phonological rules (i.e. rules that manipulate distinctive features) and allophonic rules (those that assign redundant features) are strictly separated: e.g. nasal place assimilation in Hungarian is ‘phonological’ in *vén tyúk* [ve:ɲcu:k] ‘old hen’ since the difference between [n] vs. [ɲ] is distinctive (cf. *ín* [i:n] ‘sinew’ vs. *íny* [i:ɲ] ‘gums’), but the same process is non-phonological in *vén kakas* [ve:ɲkəkɔʃ] ‘old cock’ since the difference between [n] vs. [ɲ] is non-distinctive (the latter only occurs before [k, g] within the morpheme).

This led to the rejection of the phonemic level (Halle 1959) and a uniform treatment of distinctive and non-distinctive features within the phonology. Phonological rules may refer to both in the same way with the qualification that phonological rules or constraints that manipulate non-distinctive features tend to be ‘shallow’, i.e. apply ‘late’ (post-lexically). Still in generative phonology (and in most theories that grew out of it) a crucial difference remains: distinctive features are the only basis of lexical contrast in the sense that the identity of a formative in the lexicon is exclusively encoded in distinctive features (disregarding diacritic marks). Recently in an influential paper (Steriade 2000) even this residual difference has been questioned. She claims that there are arguably lexical phonological patterns (she analyses paradigm uniformity effects) that can only be captured if non-distinctive features are crucially referred to. The phenomenon discussed by Steriade is the Withgott effect (Withgott 1983), which consists in the underapplication of flapping in some words in AmE where the structural description of flapping is met⁴. Steriade analyses the non-application of flapping in a flapping environment (which she assumes is V([C, +son, -lat])__V, foot internally) in words like *militaristic* [ˌmɪlɪtʰəˈrɪstɪk] – in contrast with the regular application of flapping in the same environment in some other words like *capitalistic* [ˌkæpɪtəlɪstɪk] – as an output-output correspondence (paradigm uniformity) effect. The derived words ‘inherit’ (i.e.

3 This is actually Trubetzkoy’s (much earlier) insight.

4 and, concomitantly, the overapplication of aspiration in some words where the structural description of aspiration is not met

have to agree in) some features of their base (underlined in (1)): the emboldened *t* of *militaristic* is not flapped – even though the conditions for flapping are met – because the corresponding segment of *military* is not flapped,⁵ and the paradigm uniformity constraint overrides (i.e. ranks higher than) the phonological constraint (flapping). In *capitalistic* flapping will occur because its phonological conditions are met *and* its target corresponds to the flapped consonant of *capital*:⁶

(1)	<u><i>militaristic</i></u> [ˌmɪlɪ ^h t ^h ə'ristɪk]	<u><i>militàry</i></u> ['mɪlɪ ^h t ^h eri]
	<u><i>càpitalistic</i></u> [ˌk ^h æpɪ ^r ə'lɪstɪk]	<u><i>cápital</i></u> ['k ^h æpɪ ^r əl]

Steriade's point is that the inherited feature (which she takes to be closure duration) is non-contrastive and thus the phonological pattern (the paradigm uniformity effect) can only be captured in terms of non-contrastive features. Her larger agenda (beyond claiming that the phenomenon analysed cannot be captured with distinctive features⁷) is that this is an argument showing that “phonological” and “phonetic” features are not being treated differently when it comes to enforcing morpheme invariance’ (Steriade 2000: 313.), which suggests that ‘grammatical structures and their physical implementation cannot be separately studied’ (Steriade 2000: 314.).

In what follows I will discuss an ‘even worse’ state of affairs when a pattern can be captured in a uniform way *neither* when non-contrastive features are taken into consideration (a ‘phonetically-oriented’ approach), *nor* when they are disregarded (a ‘phonologically-oriented’ approach). In order to see this, let us examine word-initial stop+sonorant clusters in English.

5 For phonological reasons: the following vowel is stressed in AmE.

6 Note that not all features of the base are inherited by the derived word, e.g. the prosodic prominence (stress) of the third syllables of *militaristic* and *military* (and consequently the quality of the nuclear vowels) are not the same. This means that the paradigm uniformity constraints that require identity between base and derivative have to be relativised to specific segmental/prosodic properties.

7 Davis (2005) is a reanalysis of the Withgott effect discussed by Steriade in which he claims that in *militaristic* the phonological conditions for flapping are not met since the putative target is initial in the third syllable of a non-word-final dactyl (*milita-*), a strong position where flapping does not apply. In *capitalistic* flapping is a paradigm uniformity effect where it is the foot structure of *capital* that is inherited rather than some non-contrastive feature.

2 The phonotactics of word-initial stop+sonorant clusters

In English stops and sonorants strictly observe sonority sequencing when they combine into word-initial clusters. Furthermore, nasals may not follow the stops, but liquids and glides can. The BrE pattern is given in (2) below (where rows represent the first consonant in a #CC cluster and columns represent the second one):

(2) #stop+sonorant clusters in BrE

	w	j	l	r
p, b	-	+	+	+
t, d	+	+	-	+
k, g	+	+	+	+

It can be seen in (2) that not all combinations of word-initial stop+non-nasal sonorant occur: /*#pw, *#bw, *#tl, *#dl/ are missing. Furthermore, fortis and lenis stops behave in the same way: the fortis-lenis pairs of identical place of articulation cooccur and not cooccur with the same sonorants.⁸

The same is true of the AmE pattern with the qualification that here /*#tj, *#dj/ are also missing (e.g. *tune, dune*: BrE [tju:n, dju:n], AmE [tu:n, du:n]).

(3) #stop+sonorant clusters in AmE

	w	j	l	r
p, b	-	+	+	+
t, d	+	-	-	+
k, g	+	+	+	+

Thus, in BrE pattern it is [j] and [r] that behave in the same way, while in AmE it is [j] and [l] that do.

8 I disregard sporadic occurrences like *pueblo* ['pweblou], *bwana* ['bwa:nə], etc, whose token frequency is extremely low (and the extremely low type frequency of [#gj], which occurs in one item only (*gules* [gju:lz])).

3 The pattern and the problem

The widespread and intuitively appealing explanation of these patterns is that those clusters are missing that are *homorganic*: the consonants making up word-initial stop+sonorant clusters cannot have the same place of articulation.⁹

In this section I want to try to make sense of this explanation by making it more precise. In particular, I want to raise the question of how homorganicity has to be calculated in order for this claim to be true. First I will focus on the BrE pattern.

If we want to maintain the explanation that it is the homorganic clusters that are missing, then we have to claim that (i) [t, d] and [l] are homorganic and also that (ii) [p, b] and [w] are homorganic. Crucially, (i) and (ii) must *both* be true.

(i) does not appear to be a problem because [t, d, l] are all phonetically alveolar. However, since [r] and [j], which are both postalveolars/palatals, *can* combine with [t, d], it is clear that the alveolar vs. post-alveolar difference must be taken into consideration, since apparently alveolar [t, d] cannot combine with alveolar [l], but can combine with post-alveolar [j, r]. In English the alveolar - post alveolar difference is only distinctive in fricatives, since only fricative phonemes are minimally distinguished by it (/s/ vs. /ʃ/, *see* vs. *she*). As the post-alveolar/palatal property (usually expressed as [-anterior] in coronals) is non-distinctive in sonorants, it follows that if we want to attribute that lack of [*#tl, *#dl] to the ban on homorganicity, then we have to calculate homorganicity *phonetically*, i.e. by making reference to non-distinctive features (as well as distinctive ones), because we want to permit the clusters [#tr, #dr, #tj, #dj], whose second consonants are only *redundantly* post-alveolar. Under this interpretation these clusters are well-formed because the consonants involved are *not* homorganic: [t, d] are [+anterior] and [r, j] are [-anterior]. [*#tl, *#dl] are missing because [t, d] and [l] are all [+anterior] and thus, homorganic. Crucially, we must refer to [anterior], which is redundant in coronals stops and sonorants.

(ii) above must be incorporated into this analysis, too. If we want to derive the lack of [*#pw, *#bw] from the ban on homorganicity, then we have to claim that [w] is labial (since [p, b] are clearly labials). Phonetically, however, [w] is labiovelar, so its velarisation must be disregarded when homorganicity is calculated. Since velarisation ('traditionally' expressed as [+back] in consonants) is a redundant feature in English, we obviously have to calculate homorganicity *phonologically* here: [w] is phonetically labiovelar, but phonologically it behaves

9 Some authors even suggest that onset clusters cannot share place universally in all languages, cf. Kaye, Lowenstamm and Vergnaud (1991).

like a labial and therefore it is homorganic with [p, b] – hence the lack of [*#pw, *#bw]. Crucially, we must disregard the [+back] feature of [w] in order for it to count as homorganic with the unvelarised labials [p, b].

The problem is obvious: the homorganicity analysis only works if we calculate homorganicity differently in the two cases. In one case (i) the calculation must be phonetic and redundant features are essential in the definition of what counts as homorganic, in the other (ii) the calculation must be phonological and redundant features must be disregarded. The problem is that the two cases appear in the same system, and thus homorganicity cannot be given a uniform definition.

Note that it is not possible to claim that the ban on homorganicity applies to the two cases at different levels of the same system, first at a ‘deeper’ one where only distinctive features are specified and then a ‘shallower’ one where redundant features have been specified too, because (a) both are static phonotactic constraints and the distinction between them would be completely unmotivated, and (b) even if we allowed the distinction, alveolar+post alveolar CC clusters would be filtered out at the deeper (phonological) level (where the redundant post-alveolar specification would not be present and the two consonants would be homorganic) just like labial+labiovelar CC clusters, and thus it is completely irrelevant that they would be permitted at a shallower (phonetic) level.

This is a no-win situation: on the one hand, it is not possible to give homorganicity a uniform definition, and on the other, abandoning the homorganicity analysis seems to be counterintuitive and to be losing an attractive generalisation.

There is, however, a dim (and as it will turn out, treacherous) light at the end of the tunnel. One might try to salvage the analysis by utilising the fact that there is a difference between the status of [–anterior] (postalveolar/palatal place in coronals) and [+back] (velarisation in consonants) in the system. Although [–anterior] is redundant for coronal sonorants, it does function contrastively elsewhere in the BrE system: it is distinctive for coronal fricatives (/s, z/ vs. /ʃ, ʒ/). By contrast, [+back] is *never* distinctive in consonants in BrE.

Making use of this difference, one might suggest the following as a general principle: those and only those features are available for the definition of homorganicity that are contrastive *somewhere* in the given system. This would explain why labiovelars count as homorganic with labials while postalveolars do not count as homorganic with alveolars.

Unfortunately, however, the same escape route is not available in AmE, where the palatal/postalveolar glide [j] and the postalveolar liquid [r] behave differently (unlike in BrE where they behave in the same way). In AmE [j]

behaves like [l] in that it does not cooccur with the alveolar stops but [r] does while [w] has the same distribution as in BrE (cf. (2) and (3)). This seems an unsurmountable problem for the homorganicity analysis. [+back] is well-behaved: it is never distinctive in consonants in AmE either and it must be abstracted away from in the definition of homorganicity (in the same way as in BrE). [-anterior], on the other hand, is a nuisance: it seems to count for homorganicity in [r] (since it makes [r] non-homorganic with alveolar stops and thus [#tr, #dr] exist), but it seems *not* to count for homorganicity in [j] (since it does not make [j] non-homorganic with alveolar stops and thus [*#tj, *#dj] do not exist). This two faced behaviour of one and the same feature in AmE makes it impossible to save the homorganicity analysis in the way described above because [-anterior] certainly does function distinctively somewhere in the AmE system (/s, z/ vs. /ʃ, ʒ/) and nevertheless seems to be disregarded for homorganicity in [j].

Thus, we seem to be back where we started from: we have an intuitively appealing phonological generalisation that can be expressed in a homogeneous way *neither* when phonetic details are taken into consideration *nor* when they are disregarded. ‘Wouldn’t it be great if for just one moment everything was alright?’¹⁰

10 Tom Petty & The Heartbreakers performing ‘Mystic Eyes’ by Van Morrison in concert in Gainesville, Florida, 2006.

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