MAJOR CLASS FEATURES IN PHONOLOGICAL DESCRIPTION

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1 In recent years the number of major class features used by generative phonologists has grown from two to three and sometimes four By major classes I mean vowels, obstruents, liquids, and so on, and by major class features I mean those binary features, with or without phonetic correlates, that serve to divide segments into the major classes

In the 'old days', four major classes were felt to be sufficient, and only the features [consonantal] and [vocalic] were used, giving vowels, liquids, glides, and consonants (including obstruents and nasals), as shown in (1)

(1)

[-consonantal, +vocalic] VOWELS	[+consonantal, +vocalic] LIQUIDS
[-consonantal, -vocalic] GLIDES	[+consonantal, -vocalic] CONSONANTS

In the middle and late 1960's, a need was felt for a feature which would separate obstruents from everything else, and the feature [sonorant] was introduced This feature made it possible, among other things, to subdivide consonants into obstruents and nasals without using the feature [nasal], which had previously been necessarily a high-order, if not a major class, feature In Chomsky & Halle 1968 (henceforth SPE), [sonorant] is mentioned and defined (chapter 7), but it plays no role in phonological rules, and is introduced in the marking section by an 'absolute convention' which simply states that vowels, nasals, and liquids are sonorants, no *m*'s or *u*'s are associated with the feature

After the publication of SPE and the adoption by many phonologists of the features presented in it, [vocalic] began to be considered less useful than [syllabic], and recent texts such as Schane 1973a and Hyman 1975 have included three features, [sonorant], [syllabic], and [consonantal], which give the major classes shown in (2)

(2)

[+sonorant, +syllabic, +consonantal]	[-sonorant, -syllabic, -consonantal]	[+sonorant, -syllabic, -consonantal]
SYLLABIC LIQUIDS & NASALS	GLOTTALS (not SPE)	GLIDES (&SPE glottals

[+sonorant, +syllabic, -consonantal]	[+sonorant, -syllabic, +consonantal]
VOWELS	NONSYLLABIC LIQUIDS & NASALS

[-sonorant, -syllabic, +consonantal]	[-sonorant, +syllabic, +consonantal]
OBSTRUENTS	SYLLABIC OBSTRUENTS ([r̩]?)

Recently, some suggestions have been made (Wheeler 1972, Grace 1975) that [vocalic] be retained in order to distinguish nasals from obstruents without using the feature [nasal], and in order to express the similarity between vowels and liquids

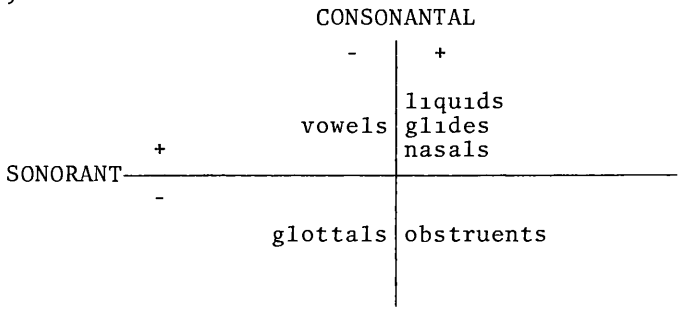
2 I would like to suggest that the number of major class features used at the underlying level in generative phonological descriptions again be reduced to two Why two? Two, because this gives four major classes, sufficient, as far as I know, for characterizing the underlying segments of any language Which two? [Sonorant], to separate obstruents from sonorants, and [consonantal], to separate consonants from vowels and glottals These two features give the major classes shown in (3)

(3)

[+sonorant, +consonantal]	[+sonorant, -consonantal]
GLIDES, LIQUIDS, NASALS	VOWELS
[-sonorant, -consonantal]	[-sonorant, +consonantal]
GLOTTALS	OBSTRUENTS

We thus have two dichotomies on the axis [±consonantal] there are vowels and consonants, corresponding to the cover symbols C and V On the axis [±sonorant] there are obstruents and sonorants The axes look like this

(4)



Before going into the consequences of this, I need to say something about the feature [syllabic]

Without this feature, there is no way to distinguish syllabic liquids and nasals from nonsyllabic ones This is fine with me, since I know of no language in which the syllabicity of a sonorant (or even an obstruent) cannot be specified by a low-level phonetic rule A counter-example to this, of course, would be a language in which syllabic and nonsyllabic segments, otherwise identical, were shown to be in contrast at the underlying level of representation

The examples usually chosen to show that [syllabic] is a necessary feature are (1) the ease with which CVCV syllable structure can be stated and (2) French truncation CVCV syllable structure can, it is true, be stated elegantly by means of the feature [syllabic], as shown in (5) (Hyman 1975 43)

(5)

##[-syll][+syll][-syll][+syll] ##

But note that many if not all CVCV languages also allow words or syllables to begin with a vowel, to show this, it is necessary to use parentheses around the first segment, as shown in (6)

(6)

##([-syll])[+syll][-syll][+syll] ##

If, however, only the features [sonorant] and [consonantal] are used, the fact that whatever you start with you must keep switching back and forth can be simply and elegantly expressed

(7)

$$\#\#\begin{bmatrix}\alpha son\\ -\alpha cons\end{bmatrix}\begin{bmatrix}-\alpha son\\ \alpha cons\end{bmatrix}\begin{bmatrix}\alpha son\\ -\alpha cons\end{bmatrix}\begin{bmatrix}-\alpha son\\ \alpha cons\end{bmatrix}\quad\#\#$$

Similarly, the fact that in French vowels drop before vowels and consonants before consonants at syllable boundaries, but liquids and glides do not drop, can be simply handled with the same features

(8)

$$\begin{bmatrix}-\alpha son\\ \alpha cons\end{bmatrix} \rightarrow \emptyset \;/\_\_\_\$[\alpha cons]$$

The difference between vowels and glides has been expressed by means of [syllabic] in recent work But in generative phonological descriptions of many languages, there are no underlying glides Surface glides are derived from underlying vowels by means of syllabicity rules, just

as syllabic consonants are derived from the corresponding underlying nonsyllabic consonants

3 But what about languages in which underlying glides are necessary? In the description of these languages, a decision to use only [sonorant] and [consonantal] as major class features forces glides into the same major class as liquids Nasals, of course, can be dealt with as before, by means of the feature [nasal]

My suggestion is that in languages which can be shown to need underlying glides in their descriptions, these glides function exactly as liquids do—as sonorant consonants One example is French we have already seen that liquids behave just as glides do in consonant truncation—that is to say, they are not dropped before syllable boundaries There is an exception to this rule, however, noted in Schane 1973b after [e] and [i], [r] and [j] (derived from underlying /l/) *are* dropped, as in *premier* and *gentil* followed by pause or a consonant

(9)

premier	*premier ami*	*premiers amis*
/prəmje/	/prəmjɛramɪ/	/prəmjezamɪ/
gentil	*gentillesse*	*gentil garçon*
/ʒãtɪ/	/ʒãtɪjɛs/	/ʒãtɪgarsɔ̃/

If the liquids and glides in question have the same major class features, it is reasonably easy to state the rule

(10)

$$\begin{bmatrix} +\text{son} \\ +\text{cons} \\ \alpha\text{high} \end{bmatrix} \rightarrow \emptyset \; / \; \begin{bmatrix} +\text{son} \\ -\text{cons} \\ -\text{back} \\ -\text{low} \\ \alpha\text{high} \end{bmatrix} \_\_\_\$$

If they have different major class features, the rule becomes more complex, as shown by Schane's rules (ibid)

Two examples come from English First, in restrictions on syllable structure, liquids and glides seem to behave identically The only nonvowels which may follow a syllable-initial stop are liquids and glides, as in *crack, quack, claque, crick,* and *cute* If initial *s* is followed by *t*, only *r* or *j* may precede the next vowel The second example concerns a phonetic change that is taking place in American English, especially observable in the speech of younger people in the midsection of the country Diphthongs are being flattened before liquids, as in [fa rɪ] *fiery*, [wald] *wild*, [ta l] *towel*, and [ba r] *buyer* This flattening is evident even in areas where diphthongs are not flattened in other environments If the diphthongs in question are analyzed as vowel plus glide at some point in their derivation, the flattening can be expressed as a kind of assimilation, the dropping of one segment before another of the same type If liquids and glides do not share major class features, the motivation for the assimilation is less obvious from the description

4 If liquids and glides are the same, how do we keep them distinct? I suggest that we invent a cover term for them ('approximants' or 'resonants') and keep them distinct by means of their points of articulation That is, the point of articulation will determine whether the approximant associated with it is a semivowel, an *r*-like or lateral sound, or a pharyngeal This is summarized in figure (11) (see next page), which shows that laterals, and in fact all sounds that are called liquids, are articulated only in the coronal area The number of points of articulation needed for characterizing the pronunciation of obstruents is quite large, for segments with less constriction, i e approximants, fewer points are necessary Calling liquids and glides the same segment type, besides the advantages already noted, enables us to use these 'empty slots' in what seems to be a non-Procrustean way

I intend to consider all of this what is called an 'empirical hypothesis' in my own work, and to look for more examples and counterexamples The latter would include, as already noted, languages in which the feature [syllabic] could be shown to be necessary at the under-

lying level Other counterexamples would be languages in which liquids and glides could be shown to be in contrast at the same point of articulation, and languages in which liquids behaved less like glides than like any other major class

(11)

LABIAL	[+anterior, -coronal]	w, ɥ	DENTAL-ALVEOLAR	[+anterior, +coronal]	r, l
RETRO-FLEX	[-anterior, +coronal, -high]	ɾ, ɭ	ALVEO-PALATAL	[-anterior, +coronal, +high]	ʎ
PALATAL	[-anterior, -coronal, +high, -back]	j	VELAR	[-anterior, -coronal, +high, +back]	ɯ
UVULAR	[-anterior, -coronal, -high, -low, +back]	R	PHARYN-GEAL	[-anterior, -coronal, +low, +back]	ʕ

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