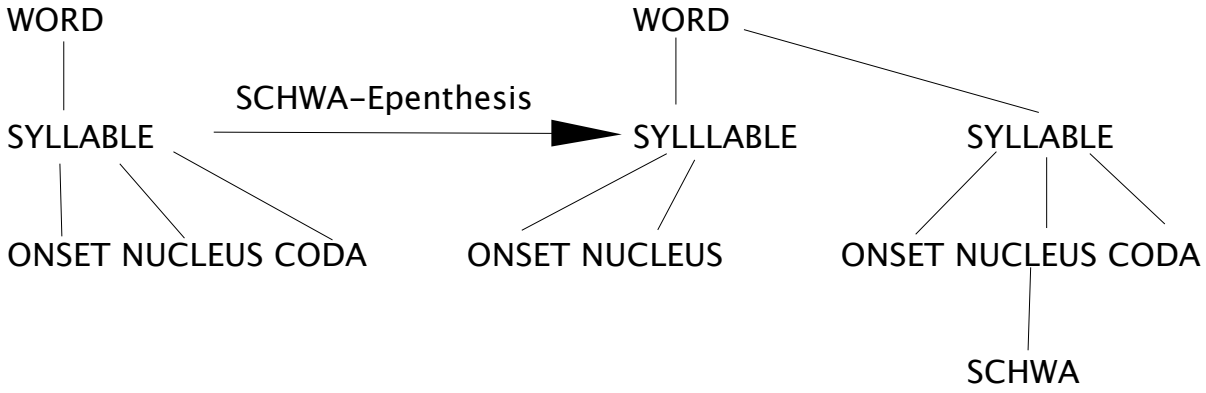
Björn Wilmsmann

Schwa-Epenthesis and Syllable Structure in Dutch

Dutch shows a phenomenon concerning the phonological and phonotactical realization of the syllable structure of monosyllabic words like 'melk' ('milk'), 'warm' ('warm') or 'Belg' ('Belgian') called 'Schwa-Epenthesis'.
This means that a schwa is inserted between the word-final consonants of monosyllabic words, thus creating a second syllable, of which the schwa sound is the nucleus. This phenomenon cannot be accounted for by a linear rule, since the schwa epenthesis not only works on the level of clearly separable phonemes, but also on the level of syllable structure, forasmuch as by the insertion of the additional vowel, the syllable structure is extended, too.
The processes involved can be depicted using a tree-structure diagram as follows:



This diagram is intended to present that on account of 'Schwa-Epenthesis' not only an additional vowel is inserted into the linear structure of phonemes, but because of this insertion the syllable structure of the respective word is extended, whereupon the coda of what was the only syllable of the word before becomes the onset of the newly created second syllable.

Vowel Harmony in Turkish

A characteristic feature of the phonological system of Turkish is called 'vowel harmony', which basically means that all vowels contained in a word form must have at least one feature in common. First of all, in order to elucidate, what I am talking about, I will give a brief overview of the sounds of the Turkish vowel system, which can be characterized using distinctive feature values as follows:

i	:	[+ front, – round, + high]
e	:	[+ front, – round, – high]
y	:	[+ front, + round, + high]
ø	:	[+ front, + round, – high]
ɨ	:	[– front, – round, + high]
a	:	[– front, – round, – high]

u	:	[- front, + round, + high]
o	:	[-front, + round, - high]

Due to vowel harmony the qualities of vowels added to any given word by inflectional affixes are realized according to the features of the vowel sounds in the stem, that is to say, all vowels contained in a word must share at least one feature value.
Concerning the data provided here , this feature value are either [+ front] or [- front] and [+ round] or [- round]. A rule explaining the morphological processes portrayed here must not only allow for the inflectional suffix added to the word according to a linear rule, but also has to consider how the vowel in that suffix has to be fitted into the word's underlying vowel harmony:

Rule for creating the genitive singular:

CONS.VOWEL.CONS -> CONS.VOWEL.CONS – VOWEL.N

[(alpha) front, (beta) round]

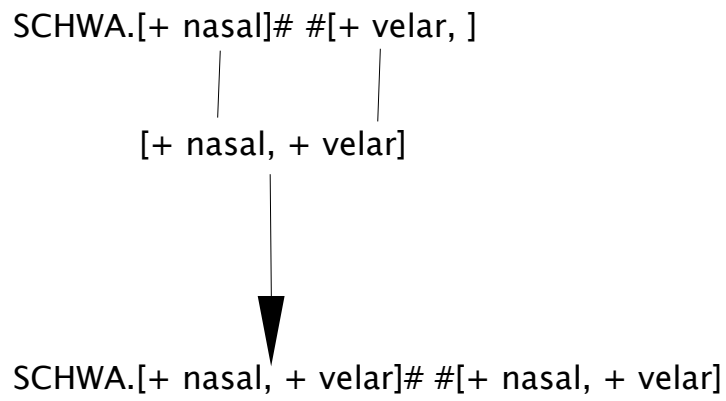
Rule for creating the nominative plural:

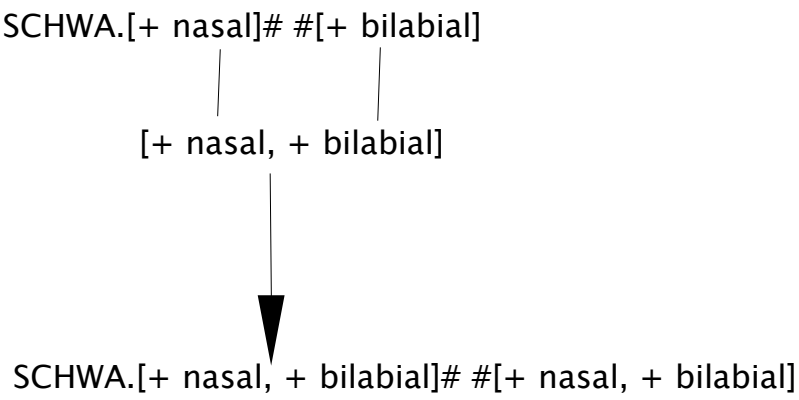
CONS.VOWEL.CONS -> CONS.VOWEL.CONS – L.VOWEL.R

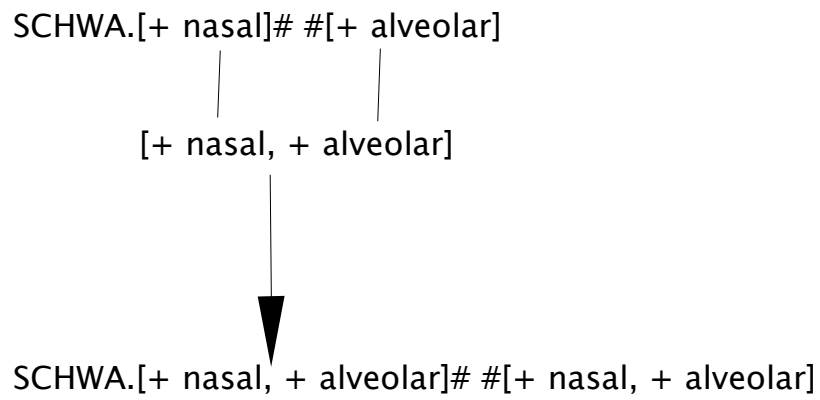
[(alpha) front]

Assimilation of Nasal Sounds in Welsh

As for Welsh, nasal sounds at word boundaries followed by a word beginning with a plosive sound display an interesting impact of assimilation on both these nasal and the subsequent plosive sounds.
The change occuring to word-final nasal sounds in Welsh when followed by a word-initital plosive sound can be illustrated by introducing an autosegmental feature that contains the place and manner of articulation of the nasal sound at the end of the first word and the plosive at the beginning of the following, contiguous word.
That is to say, if, for instance, the word-initial plosive succeeding the nasal sound is usually created bilabially, the resulting autosegmental entity will also be have bilabial quality.
The autosegmental entity bearing the features of the two contiguous sounds then affects both sounds ensuring that they both be realized as the same sound according to the underlying autosegmental features.
The general term for such a process is 'assimilation', but the underlying process taking place obviously can only be explained applying an autosegmental approach:







Conclusion

All the phenomena epitomized here, in spite of the obvious differences between the phenomena themselves and the languages they occur in, have one aspect in common, namely that they cannot solely be expounded by the use of the traditional linear approach of phonetic rules.
This means that at least to a certain extent each of the rules explicating these phenomena must contain a non-linear component:

As for the Schwa-Epenthesis in Dutch besides the insertion of an additional vowel, the syllable structure is affected as well, which no simple linear rule could account for. Regarding the specimens of the other two languages, that is of Turkish and Welsh, one has to add an autosegmental tier aside the surface structure explaining, how certain features impinge on several sounds at the same time, in order to be capable of properly stating the processes at hand.