Velar segments in Old English and Old Irish

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The purpose of this paper is to look at a section of the phoneme inventories of the oldest attested stage of English and Irish, velar segments, to see how they are manifested phonetically and to consider how they relate to each other on the phonological level. The reason I have chosen to look at two languages is that it is precisely when one compares two language systems that one notices that structural differences between languages on one level will be correlated by differences on other levels demonstrating their interrelatedness. Furthermore it is necessary to view segments on a given level in relation to other segments. The group under consideration here is just one of several groups. Velar segments viewed within the phonological system of both Old English and Old Irish correlate with three other major groups, defined by place of articulation: palatals, dentals, and labials. The relationship between these groups is not the same in each language for reasons which are morphological: in Old Irish changes in grammatical category are frequently indicated by palatalizing a final non-palatal segment (labial, dental, or velar). The same function in Old English is fulfilled by suffixes and/or prefixes. This has meant that for Old English the phonetically natural and lower-level alternation of velar elements with palatal elements in a palatal environment was to be found whereas in Old Irish this alternation had been denaturalized and had lost its automatic character. Here one has the reverse influence of a higher sound structure level on a lower one: palatalization was originally a phonetically conditioned phenomenon in pre-Old Irish and became morphologized when it took over the function of distinguishing grammatical categories such as case, number, etc. After this point the natural assimilations of place of articulation were blocked as palatalization and non-palatalization were used for morphological contrast.

Now to consider actual velar segments let me begin with Old English. The inventory of obstruents was as follows.

(1) /k/, /g/, /x/

The phonetic segment /γ/ also existed but only as a phonotactically predictable variant of the voiced velar stop. This in itself is remarkable as Old English has voicing of voiceless fricatives in intervocalic position generally (note /b/ > /v/, /s/ > /z/, /θ/ > /ð/). The expected voicing of /x/ is not found which may be due to the progressive loss of /x/ in inter-vocalic position (compare pre-Old English *sexan with West Saxon seon ‘to see’) which then allowed the /γ/ as a contextually predictable variant of /g/. Note that the voicing which can be seen here is an example of intervocalic lenition which is also found in Irish throughout its entire history.

The scope open to lenition is determined by the configuration of the remaining segments. Thus /k/ does not have a voiced allophone in Old English as there is
already a /g/ segment on a phonological level, nor does it alternate with /x/ for similar reasons.

I wish to maintain this position although it may smack somewhat of teleology and to substantiate it later on. But first to an apparent objection to it. There seem to be cases of phonemic overlapping in Old English if one considers forms such as

\( fæg, fæh \) ‘blood-stained’, ‘variegated’

Both of these are orthographic forms occurring in Beowulf. Now assuming that the grapheme \( g \) represents /g/ and \( h /x/ \) then it might seem that one has both an independent phoneme /x/ and a phone \([x]\) which is an allophone of /g/. But this unlikely situation turns out to be quite simple to resolve if one considers two processes operating at different levels from, each other. First one has lenition which operates obligatorily on inter-vocalic segments and optionally on final ones. This would give

\( \begin{align*}
(2) & \quad fæg /fa:\gamma/ \\
(2) & \quad fæg /fa:g/ \quad [fa:k]
\end{align*} \)

If both lenition and final devoicing operate then it is

\( \begin{align*}
(2) & \quad fæg /fa:\gamma/ \quad [fa:x]
\end{align*} \)

The second of the orthographic forms in (2) would then be a representation of the final form in (2)c.

Supportive evidence for the interpretation just given can be found in Modern German. In colloquial Northern German, words such as Tag ‘day’ Zug ‘train’ have alternative pronunciations, the second being less standard but nonetheless common for that.

\( \begin{align*}
(3) & \quad Tag /ta:k/ \sim /tax/ \\
& \quad Zug /tsu:k/ \sim /tsux/
\end{align*} \)

Here one has a parallel to the /fa:k/~/fa:x/ situation, final devoicing alone in the first instance, lenition and devoicing together in the second.

Apart from the processes of lenition and final devoicing a third is also operative in Old English and determines the phonetic form which velar segments take. This is assimilation to the place of articulation. Both velar stops have fronted allophones before front vowels. But again the particular allophone is conditioned by the remainder of the phoneme inventory. While /k/ has the allophone \([t\varsigma]\) (>Modern English /tʃ/) before front vowels (not all instances of course, notably not with those where the front vowel resulted from mutation (Campbell, 1959:174) cf. cyning /kynin\(\varsigma k/\)
coesan ‘to choose’; curon ‘chose (p1.)’

/g/ has a fricative allophone [j]

(5)  ꞑeotan ‘to pour’; guton ‘poured (pl.)’

This corresponds to the situation which is still found in present-day Swedish (Malmberg (1971:98)) and in central dialects of German (Meinhold and Stock 21982: 165) where however the fricative realization can also occur before back vowels.

In Old English the allophony of the voiced velar stop was complicated by the existence of the voiced palatal affricate [d?]: (Modern English /d?/). This appear as the reflex of a geminate /gg/ before high vowels. Its occurrence is restricted to medial position (and final position where this is the result of apocope).

(6) seegan ‘say’; hecg ‘hedge’
    compare Old High German hegga ‘enclosure’
    Old Saxon seggian ‘say’ (Kluge-Mitzka 21975: 619 + 296).

It is unclear to what extent one should posit two voiced velar stop phonemes, one short and one long. Against this one could point to short and long /k/ and /k:/ which show the same allophony (including affricativization). In addition there are some cases where both /g/ and /g:/ have an affricate allophone after front vowels. These instances have been the subject of considerable comment. Consider the forms which Lass and Anderson (1975:145ff.) examine.

(7) seegan < *sæggjan ‘say’
    mengan < *mængjan ‘mix’

The position which they maintain is that in both forms of (7) the occurrences of /g/ were ‘protected’. In the first there was a double /gg/ where the first /g/ then represented a strong segment protecting the second one from lenition to /j/. In this view /j/ is a lenited element whereas /d/ is not. In the second instance the nasal has a similar ‘protecting’ influence, inhibiting the lenition of /g/ to /j/, thus leaving it as /dʒ/ as in the first form. I basically agree with this position but would prefer a more phonetic account rather than appeal to a putative protective effect. With both geminates and post-nasal single consonants one has a period of closure longer than with post-vocalic single consonants. The long closure enables the tongue to advance to the point of articulation for the following /j/ with ease. In both cases velar closure formed the onset of the occlusion and with closing jaw movement the point of closure was brought forward so that on release it was palatal giving assimilation to place of articulation. The fact that with forms such as mengan the initial stage of occlusion was, nasal is irrelevant as this would not effect the assimilation in place of articulation. From the point of view of tongue configuration geminates and nasal-plus-single-consonant clusters are the same. The sound produced on release of the tongue from a palatal position was an affricate due to the absorption of /j/ (a palatal fricative) into it. This could only have not been the case if /j/ had syllabic prominence and resisted absorption but this is known not to have been so.

To conclude then I will maintain for my purposes here that /dʒ/ was a fronted allophone of a former /g:/ and that the latter had overlapped with /g/ when this was
in a post-nasal environment. Note that the velar intervocalic allophone of /g/, viz. [ɣ] did not exist for /g:/ which retained its stop character despite the weakening environment as in

(8) \(\text{frogga} \, ‘\text{frog}’; \, \text{dogga} \, ‘\text{dog}’\)

At this stage let me switch to Old Irish to show how the processes just considered affected velar segments there. The inventory of velar obstruents for Old Irish is as follows.

(9)  /k/, /g/, /x/, /ɣ/

Exx. caíllech /kal,ɔx/ ‘witch’

grád /graːð/ ‘love’

ech /ɛx/ ‘horse’

togu /tɔɣu/ ‘choice’

Phonemic overlapping in Old Irish occurred abundantly. This is because voicing and fricativization are found regularly both as the result of (i) intervocalic position of segments and (ii) the morphological processes which require consonants to be voiced or fricativized to indicate grammatical categories. The latter is of course a development of the former but for purposes of classification one must distinguish whether voicing and fricativization occur for phonetic or morphological reasons.

The forms of overlap are as follows: /g/ represents /k/ intervocally and sometimes word finally (phonetic lenition)

(10) bucae /buːg/ ‘softness’

póc /poːɡ/ ‘kiss’

/x/ represents /k/ after morphological lenition

(11) a chrann /ɔ xran:/ ‘his tree’

Though here one can regard the change as phoneme substitution as with /k/ to /g/ in

(12) a crann /ə gran:/ ‘their tree’ (modern spelling: a gcrann)

where the substitution of one segment for another indicates the desired grammatical category. The appearance of [ɣ] for /g/ is phonetic, it being the intervocalic realization of the stop as in Old English. But with the development of morphological lenition this phone was raised to the level of a phoneme as it now contrasted with /g/ initially.

(13) a grád /ə ɣraːð/ ‘his love’

cf. a grád /ə graːð/ ‘her love’

The two velar fricatives were then possible in word initial position but only as a result of morphological lenition. Here one can see how an important role in the morphology of a language can secure the position of phonological segments throughout a language’s history. The function of distinguishing the third person,
masculine and feminine, singular and plural is obviously very basic and despite the significant changes in the phonology of Irish since the time of Old Irish, the method of distinguishing the various forms of the third person possessive pronoun has remained the same: fricativization for the masculine singular, no change for the feminine singular and voicing or nasalization for the plural. This has maintained /x/ and /ɣ/ in initial position with respect to /k/ and /g/. Throughout the course of the history of Irish the word-internal, or more precisely the morpheme internal development has been as follows: the voiced velar fricative was vocalised in this position just as in English. Morpheme finally it was also lost. The voiceless velar fricative survived but only in morpheme final position where it commonly occurs in Modern Irish.

This corresponds to an earlier stage of English as the standard modern language has vocalised /x/ as well, but to a later one than that where the voiceless velar fricative disappeared. It is to be expected that this would be the case because the final stage of lenition, that is vocalization, is reached more quickly by voiced segments such as [ɣ] than voiceless ones such as [x].

At this point a few general remarks about the phonotactics of velar segments in Old English and Old Irish seem appropriate. In both Old English and Old Irish the weakest position for fricatives and simultaneously the strongest one for stops is the morpheme initial position. Old English as well as the other Germanic languages has lost /x/ in this position (Campbell 1959: 180f.). It has either fused with /h/ or disappeared entirely. For example

\begin{align}
(14) \quad hlaf /xla:f/ & \rightarrow /la:f/ - /louf/ \quad \text{"loaf"} \\
meaht /meaxt/ & \rightarrow /mlxt/ - /mi:t/ \rightarrow /mait/ \quad \text{"might"} \\
heah /hm:ax/ & \rightarrow /hi:x/ - /hi:/ - /hait/ \quad \text{"high"}
\end{align}

There is a third possibility, that of labial shift, which I will deal with presently. In Irish the voiceless velar fricative has been retained for the morphological reasons given above. It has also been kept distinct from /h/. Again there may be a motivation for this. In Old Irish, as in the present-day language, there is a morphological process of prefixing /h/ before a vowel in certain cases, for example after the feminine singular third person possessive pronoun and the plural article. This does not occur after the corresponding masculine pronoun so that where there is no initial consonant in a word (i.e. where lenition cannot fulfil its distinctive function the two forms are nonetheless distinct.

\begin{align}
(15) \quad a \ arcat /a \ hargo\delta/ \quad \text{"her silver"} \\
& /a \ a\rho\delta/ \quad \text{"his silver"}
\end{align}

/h/ has yet a further source in Old Irish as the lenited form of /s/ and later on as that of /t/ after the loss in Irish of interdental fricatives due to vocalization, or shift to /ɣ/, of voiced interdental fricatives, and reduction to /h/ of voiceless ones. The consideration here of phonotactics concerns not only the position of a segment within a morpheme but also the segments which adjoin immediately on it. Why this is imporant can be seen from Old Irish. To go by the orthographic evidence there appears to have been in Old Irish, and there certainly is in the modern language, a restriction on two plosives occurring together, the same holds for sequences of two fricatives as well; this applies within morpheme boundaries. But in Irish, either Old or Modern, there are no single consonant suffixal morphemes such as the tense or plural markers /t~/s~d/ and /s~/z/ of English so that double plosive or fricative
sequences do not occur at morpheme boundaries either. In pre-Old Irish the sequences of two plosives developed into sequences of a fricative and plosive.

(16) \textit{ocht ‘eight’ cf. Latin \textit{octo}} \textit{in-nocht ‘tonight’ noctis gen. of nox}

The development of /kt/ → /xt/ is by far and away the most common. In fact the sequence /xt/ represents one of the most frequent and productive suffixes in Modern Irish denoting abstract nouns and nouns of action. Note also that in the prehistory of the two languages Old Irish shared this particular source of the voiceless velar fricatives with Old English as the Germanic languages altered earlier sequences of /kt/, attested abundantly in Latin, into /xt/, compare the Old English forms for the words in (16).

(17) \textit{niht ‘night’ eahta ‘eight’}

Lastly on phonotactics mention should be made of nasals. In both Old English and Old Irish there were three nasals at the labial, dental, and velar positions. An additional palatal nasal was found in Old Irish as part of the palatal series of consonants. The velar nasal was only found in both languages in a final position just as in the present-day forms of both languages. But in Old Irish there was, and in Modern Irish there is, an additional circumstance which violated the normal condition that velar nasals were morpheme-final. One of the consonant mutations of Old Irish required that a homorganic nasal be substituted for an initial voiced consonant under given grammatical conditions. This did not conflict with the phonotactic distribution of non-mutated consonants with labials and dentals, as /m/ and /n/ occurred initially anyway, but it did with velars, leading to morpheme initial occurrences of the velar nasal /rl/ when this was the result of mutating /g/.

(18) \textit{a nga /ə θa/ ‘their spear’}

Turning now to assimilation in Old Irish one can contrast it with Old English. It will be remembered that assimilation to the place of articulation of a front vowel in Old English led to different allophones being used than before back vowels and that the allophones were also conditioned by the existence or non-existence of other palatal segments in the language. In Old Irish the situation is quite different. The state of affairs obtaining there is that there are not only a couple of palatal segments but a whole series. The situation in pre-Old Irish may have been somewhat similar to that of Old English but by the time of the first records of Old Irish palatalization has advanced from a phonetically motivated low-level assimilatory phenomenon to a central morphological process in the language. All consonants with the exception of /h/ come in pairs of palatal and non-palatal segments. For those consonants where the tongue is not the active articulator, i.e. for labials, palatalization is correlated by lip tension and a tongue position for a high front vowel giving a brief /j/-glide or release and non-palatalization is correlated by an unrounded high back vowel giving a /u/-glide on release.

The significance of this for the realization of consonants is that before a front vowel one has a palatal phone but one which resembles. The velar segment in all other respects, that is the palatal counterpart of a velar stop is not a fricative or an affricate. /g/ has the palatal counterpart /g/ not /j/, /k/ has /k/ and not /t/. In fact the
latter segment does not exist in Old Irish nor does its voiced counterpart /dz/. But there are two segments which are articulatorily very similar to them. These are /t/ and /d/ which are however the result of palatalizing the dentals /t/ and /d/ respectively and are unrelated to the velars /k/ and /g/. The existence of morphological palatalization in Old Irish has meant that assimilation of consonants to high front vowels only took place if the morphological category demanded it. There was no automatic realization of say /x/ as [ç] after high front vowels as in present-day High German. /x/ only had one allophone [x], but there also existed a separate phoneme /x/ This situation had an effect on vowel realization. Assuming that the orthography represents monophthongs reasonably accurately then a form such as

(19) \( \text{tech} /\text{t}e\ x/ \) ‘house’

had a mid front vowel flanked by a palatal and velar consonant respectively. But the modern pronunciation shows that lowering has taken place due to the velar /x/ which follows the vowel leading to the pronunciation /t, ax/. This may in fact have been the case in Old Irish already; it is uncertain as the orthography does not allow one to conclude this. The point I wish to establish is that velar segments cause vowel lowering. But not only velars could cause this. As all consonants had palatal equivalents the distinction of palatal and non-palatal segments assumed systematic importance and a process of secondary velarization of non-velars set in. The sounds where the velarization was most obvious (and is in the present-day language) were sonorants, above all dental sonorants as the formants caused by voicing (in an oral configuration for velar resonance) are audittively quite perceptible. These were articulated with lowering of the tongue body and raising of the back towards the velum with closure formed by the apex behind the teeth, assuming that the velarization which characterizes the realization of non-palatal sonorants in the present-day language was already established in Old Irish.

(20) \( \text{rún} /\text{ru}:\text{n}/ \) ‘secret’
\( \text{lón} /\text{lo}:\text{n}/ \) ‘provision’

Now there are cases where the vowel before the velarized sonorant is at least orthographically the same as that in (18), that is mid-front

(21) \( \text{cenn} \) ‘head’ \( \text{penn} \) ‘pen’

If the forms in (20) are parallel to that in (18) then the pronunciation which one would expect to result would be

(22) a \( \text{cenn} /\text{k}\text{a}:\text{n}/ \) \( \text{penn} /\text{p}\text{a}:\text{n}/ \)

but the modern language shows

(22) b \( \text{ceann} /\text{k}\text{a}:\text{n}/ \) \( \text{peann} /\text{p}\text{a}:\text{n}/ \)

with the vowel both lowered and retracted. It would seem correct to assume that the vowel was first shifted to /a/ and then to /a:/ the latter being the retraction found before sonorants where velarization was and is most acoustically prominent. A
similar retraction is evident in English, albeit at a much later stage (17th. century) after the labio-velar fricative /w/ as in was /wɔz/ (Welna (1978:235f.) Ekwall (41965: 23)). The position with Modern English forms such as /bɔ:ʃ/ , /tɔ : k/ , etc. is somewhat more complicated inasmuch as there was not a simple shift of /a/ to /ɔ:/ but first a diphthongization of the low central vowel to /au/ as a result of the velar /h/ in Late Middle English (Welna (1978: 192)) and then a monophthongization of this to /ɔ:/ as part of the wider change of the Great Vowel Shift. The velar /h/ which resulted in the development of the /u/ on-glide in the first place in Middle English was vocalized unless in final position (contrast the two forms given above); due to hypercorrection and the influence of spelling /l/ was introduced or reintroduced into words such as fault (<French faute), almost (for earlier a’most).

If one looks at the environment in which syllable final /l/ disappeared in Late Middle and Early Modern English then one sees that this contains consonants of two sorts: labials and velars. The explanation is simple. /l/ disappears when contact between the tip of the tongue and alveolar ridge is no longer made and the vowel which corresponds to the articulation of the /l/ remains, in this case /u/. When followed by an alveolar the /l/ is likely to be maintained as contact between apex and alveolar ridge is necessary for the following consonant. Nonetheless one could take the standpoint that the consonants before which /l/ does not survive fall into some sort of grouping opposing the set of consonants (alveolars) before which /l/ is maintained.

There would appear to be supportive evidence that this is the case. Of all the major articulation groups mentioned at the outset two of them, labials and velars, appear to either act together or to interact. Interaction is to be seen in the alternation of velars and labials diachronically. Consider first the English examples

(23)  
\[hlahhan \ /laxan/ \ /laːf/ \ ‘laugh’\]  
\[růh \ /ruːx/ \ /rɔf/ \ ‘rough’\]

They represent the third possibility for the development of /x/ in English mentioned earlier. Note that in English a velar fricative changes to a labial fricative and that is there is no change in manner of articulation. In Old Irish a shift from /p/ to /x/ is found as in

(24)  
\[secht \ /ʃə xt/ \ ‘seven’\]  
\[cf. Latin septem\]

It is not certain whether the change was /p/ to /k/ and then /k/ to /x/ or /p/ to /f/ and then /f/ to /x/. If the double plosive restriction was already operative at the time then the view that /p/ shifted to /f/ first is to be favoured. Furthermore evidence of labial to velar shift in Germanic shows that it occurs with fricatives and not so often with plosives. In Old High German it is clear that the shift involved /p/ to /f/ first. Consider

(25)  
\[OHG nift ‘niece’ \ ModHG Nichte\]  
\[cf. Latin neptis ‘grand-daughter’\]

The interaction of labial and velar segments was captured in the early Jakobson and Halle feature system (Jakobson and Halle (1956: 31)) by the use of the term [grave]
which was dropped in the later Chomsky and Halle set of distinctive features (Chomsky and Halle (1968: 304ff.)) which were ostensibly based on articulatory parameters and was later on again suggested (for example in Ladefoged (1972: 44)) as it accounted for the interrelationship observed to exist between labials and velars. This does not however explain why labials have shifted in some cases and not in others. Consider the form in (23) again. It shows the shift whereas the word for ‘nephew’, neve does not. A suggested explanation might be that /f/ shifted to /x/ to yield the segment sequence /xt/ word-finally which both in German and in Irish was a favoured sequence of segments in final position, thus the occurrence of /xt/ in Old Irish as well:

(26) necht  ‘grand-daughter’ (+ niece?)
     Contributions to a dictionary of the Irish language. Letters N-O-P (1940:19))

Lastly, I should point to the possibility of co-articulation which existed for velars and labials which is deserving of mention here. In Old English the operation of Verner’s Law left certain intervocalic instances of a voiced velar fricative with simultaneous lip rounding i.e. /yw/. The verb seon ‘to see’, mentioned at the beginning, while losing the intervocalic /x/ early on, retained a segment here when this had been voiced due to Verner’s Law, as in the preterite of the verb. The attested forms show a splitting up of this voiced intervocalic segment so that one has one of two possibilities

(25)  sağôn /-y-/  ‘saw (pl.)’
    sàwon /-w-/  ‘saw (pl.)’
    (Quirk and Wrenn 1957: 128)

which evidence the relatedness of labial and velar articulations.

References