The coronal-velar relationship in Genovese Ligurian *

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In this paper I examine an interesting case of a coronal-velar alternation displayed by Genovese Ligurian nasals. Ligurian Romance is spoken in Liguria, a region in Northwest Italy. The isoglosses defining it do not always follow the borders of the present day administrative region, here and there transcending them to include Southern Piedmontese areas. Ligurian is also the local dialect in Monaco, which was colonized by Ventimiglia, a Ligurian town, at the beginning of the thirteenth century. Since 1980, Monégasque (Monaco Ligurian) has been being taught at school, in an attempt to revive the language and the traditions of the Principality. Monégasque is also used as liturgical language in Monaco. Ligurian dialects are also spoken in the historical colonies of Genova, the administrative capital of Liguria: Bonifacio (Corsica), Carloforte and Calasetta (Sardinia). Genovese is the Ligurian dialect spoken in Genova. All the Genovese data is from Forner (1975).

Working within a theory that assumes hierarchical feature structure, phonological underspecification, and activation of features based on contrasts, I offer an account for how the kind of variability between coronals and velars displayed by Genovese can arise under certain prosodic circumstances.

1. BACKGROUND ASSUMPTIONS

1.1 Feature organization and specification


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Unlike other models which have been proposed, Place as in (1) displays a binary branching structure, whereby dorsals and labials form a single constituent to the exclusion of coronals. Phonological processes treating labials and dorsals as a single unit are discussed in Avery & Rice 1989 and Rice 1994. In (1), markedness relations are encoded in the feature geometry: unmarked features are enclosed in parentheses. What (1) says is that Coronal is the universal unmarked Place dependent, and that Labial is the unmarked Peripheral dependent. It falls out that dorsals are the most marked segments in a typical three-way place contrast inventory (see Avery and Rice 1989). I also assume that unmarked features such as Coronal are absent underlyingly, unless reasons of contrast force them to be specified (see again Avery and Rice 1989). Using the geometry and following the assumptions outlined, (2) shows the underlying representations for coronals, labials and dorsals in a three-way place contrast inventory.

\[
\begin{array}{ccc}
\text{a) labial} & \text{b) coronal} & \text{c) dorsal} \\
\text{Place} & \text{Place} & \text{Place} \\
\text{Peripheral} & \text{Peripheral} & \text{Dorsal}
\end{array}
\]

I also assume that rules are structure building and not structure changing. For the purposes of this paper, spreading only occurs when an empty target is available, and cannot trigger delinking that has to be independently motivated.

1.2 Default variability

In my account of the coronal-velar alternation in Genovese, I follow the Default Variability Hypothesis of Rice 1993b. According to this hypothesis, one source of variability in languages involves the application or failure thereof of default rules. Consider the feature Coronal. If this feature is absent underlyingly, two choices are available for the phonetic realization of a bare Place node. First, Coronal may be
implemented by a default rule, creating a coronal. Second, the Coronal default rule may fail to apply, yielding a velar. Thus (2b) is both the underlying and surface representation of a velar, differentiating between velars and dorsals, generally understood to be the same and to have the underlying and surface representation in (2c). In Rice’s terms, a dorsal is a consonant articulated with the back of the tongue raised against the velum. The phonological and phonetic representations of a dorsal is as in (2c). By contrast, a velar consonant is articulated with the tongue in position of rest, or raised in the region of the back of the mouth. The implementation of the default feature Coronal, or (partial) lack thereof and resulting interpretation of the bare Place node, is determined on a language-particular basis. For a detailed discussion see Rice 1993b. Within a system where interpretation rather than implementation is chosen, Coronal may still be (and usually is) filled in under particular circumstances. As will be seen Genovese is such an example. In Genovese, the particular circumstances are of a prosodic nature.

2. Genovese Nasals

2.1 Introduction

Genovese has four nasals (Forner 1975, Forner 1988). The full range of contrasts is quite restricted, being limited to intervocalic posttonic position if and only if the stressed vowel is in the penultimate syllable. Posttonic position is a position which is immediately preceded by main stress. The four way distinction among the Genovese nasals is shown in (3).

(3) a labial rå[m]u branch
    b dental pë[n]a pen
    c palatal rå[n]u spider
    d velar pë[n]a penalty, pain

In environments other than the intervocalic one shown in (3), the nasal inventory is smaller. In coda position only [ŋ] is permitted. In the elsewhere environment, namely in word initial position, in nonposttonic position, as well as in posttonic position where the stressed vowel is not the penult, [ŋ] is the only nasal which is not allowed. In the discussion that follows, I will focus on surface coronal and velar nasals. This is because the phoneme underlying [ŋ] in (3d), as will be shown, can show up as both [ŋ] and [n]. Coronals and velars, then, enter into a special relationship from which labials and palatals appear to be excluded. In particular, I will claim that the surface velar nasal is placeless, both underlyingly and on the surface; the surface coronal nasal is sometimes underlyingly specified for Coronal and sometimes the result of the implementation of the default feature Coronal. In the
latter case, the surface coronal nasal and the surface velar nasal share the same underlying representation, and the implementation of the feature Coronal or the interpretation of the bare Place node are performed under prosodic conditioning factors. Let us now turn to the discussion of the data and the analysis.

2.2 The data and the analysis

2.2.1 The n/ŋ alternation

Genovese displays a clear contrast between two nasals that surface as [n] and [ŋ] respectively. This is shown in (4).

<table>
<thead>
<tr>
<th>(4)</th>
<th>[n]</th>
<th>[ŋ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>kabá[n]a</td>
<td>hut</td>
<td>kappá[ŋ]a</td>
</tr>
<tr>
<td>má[n]a</td>
<td>manna</td>
<td>lý[ŋ]a</td>
</tr>
<tr>
<td>ká[n]a</td>
<td>reed</td>
<td>lá[ŋ]a</td>
</tr>
<tr>
<td>pá[n]a</td>
<td>cream</td>
<td>fl[ŋ]a</td>
</tr>
<tr>
<td>zá[n]i</td>
<td>masks</td>
<td>mí[ŋ]a</td>
</tr>
<tr>
<td>anté[n]a</td>
<td>antenna</td>
<td>fé[ŋ]a</td>
</tr>
<tr>
<td>bě[n]a</td>
<td>cradle</td>
<td>mé[ŋ]a</td>
</tr>
<tr>
<td>bré[n]u</td>
<td>bran</td>
<td>bú[ŋ]a</td>
</tr>
<tr>
<td>só[n]u</td>
<td>sound</td>
<td>veží[ŋ]a</td>
</tr>
<tr>
<td>kuló[n]a</td>
<td>column</td>
<td>u zbrá[ŋ]a</td>
</tr>
<tr>
<td>dó[n]a</td>
<td>woman</td>
<td>yí[ŋ]a</td>
</tr>
<tr>
<td>nó[n]a</td>
<td>grandmother</td>
<td>galí[ŋ]a</td>
</tr>
</tbody>
</table>

The four-way place contrast illustrated in (3) is neutralized in coda position where only [ŋ] is found. This is shown in (5).

<table>
<thead>
<tr>
<th>(5)</th>
<th>[ŋ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>pú[ŋ]pa</td>
<td>pump</td>
</tr>
<tr>
<td>ri[ŋ]búrsu</td>
<td>refund</td>
</tr>
<tr>
<td>rú[ŋ]fu</td>
<td>I snore</td>
</tr>
<tr>
<td>avá[ŋ]su</td>
<td>left over</td>
</tr>
<tr>
<td>fl[ŋ]ze</td>
<td>to pretend</td>
</tr>
<tr>
<td>rf[ŋ]ze</td>
<td>to cry</td>
</tr>
<tr>
<td>i[ŋ][ŋ]á:</td>
<td>to blow up</td>
</tr>
<tr>
<td>ţf[ŋ][ŋ]tá:</td>
<td>to plant</td>
</tr>
<tr>
<td>kwa[ŋ]nde</td>
<td>when</td>
</tr>
</tbody>
</table>
It has been often pointed out in the literature (Itô 1989, Goldsmith 1990, Prince 1984, Rice 1992, Yip 1991) that a number of languages display restrictions on the range of places of articulation that may occur in rhymal position. It is often the case that only coronal segments are licensed in that position (e.g. Finnish) and it is generally argued that this phenomenon is due to the lack of Place features in coronals. Another common pattern in codas is the presence of any place of articulation as long as this is dependent, i.e. licensed by the following onset: this can be achieved by geminates or partial geminates, i.e. heterosyllabic clusters that share the same place of articulation (e.g. Japanese). But this is equivalent to saying that codas are not allowed to have their own place features and prefer segments with minimal or no Place structure at all. Another common pattern for codas is to display glottal stops, that is to say consonants that lack structure altogether (e.g. Selayarese). These cross-linguistic generalizations about coda restrictions lead me to think that the nasal surfacing as [ŋ] in (5) is an underlying placeless segment, namely the velar posited by the Default Variability Hypothesis, rather than the fully specified dorsal in (2c). Positing a dorsal in (5) would contradict the observation that languages imposing restrictions on codas allow segments with minimal or no structure at all in rhymal position. To make things worse, maximal structure (dorsal) would be allowed to the exclusion of minimal structure (coronal), contradicting the general pattern that in rhymal position more complex segments, if present, imply less complex ones. Empirical evidence is also available in Genovese for positng [ŋ] in (5) as velar, rather than dorsal. Consider (6).

(6) a raŋu[ŋ]u / raʒu[ŋ]ému
I reason/we reason
séŋu / se[n]ému
I dine/we dine
m alunjáŋu / s' alunjat[ŋ]ému
I go off/we go off
ŋalŋu / ŋalŋa / ḳalŋin
even m., f. / slowly

b ŋáňungu / ŋgánáŋému
I cheat/we cheat
á[n]u / a[n]á:
year/vintage
m afá[n]u / s' afana[n]ému
I worry myself/we worry ourselves

In (6b) no alternation pattern is available. We can clearly posit that the surface coronal nasal is also underlyingly coronal. In (6a), the surface coronal is clearly not an underlying coronal since it alternates with a velar and there is already a coronal in the inventory. Genovese, then, displays two different surface coronals. I argue that in (6b) the alternating nasal is underlyingly placeless, and I will refer to it with the
symbol /N/, suggestive of its surface variability. Given the Default Variability Hypothesis, the phoneme /N/, being underlyingly placeless, may show variability. Given the weak licensing possibilities of codas, it is expected to retain its placelessness in prosodically restricted positions. These two aspects have been shown in (5), where the underlying placeless nasal surfaces as such in coda position and is phonetically interpreted as velar, and in (6a), where the place alternation is realized as implementation and failure thereof of the feature Coronal. Given this, the representations of the four Genovese nasals in a position of contrast, i.e. onset following the tonic vowel, are as shown in (7).

\[
\begin{array}{cccc}
\text{(7) Genovese nasals} \\
/m/ & /n/ & /n/ & /N/ \\
\text{Place} & \text{Place} & \text{Place} & \text{Place} \\
\text{Peripheral} & \text{Coronal} & \text{V-Place} & \\
\end{array}
\]

Notice that, unlike in (2), the plain coronal nasal in (7) is specified for Coronal. The difference is inventory-driven. In (2), we are dealing with a three-way Place contrast; in (7), the inventory has a four-way Place contrast.

2.2.2 A brief excursus on Italian

Let us first discuss a system like (2). Unlike in (7), the coronal nasal in (2) is placeless itself. This follows from the fact that in (2) the coronal does not contrast with another placeless segment. Hence, Coronal need not be specified underlyingly, since its activation, not accomplishing any further distinction, is redundant. This whole picture entails that in such a system there is only one surface coronal nasal, derived via implementation of the default feature Coronal. This surface nasal can be traced back to an underlying placeless nasal that may show some degree of variability due to the implementation or lack thereof of Coronal. As illustration of this, consider Italian. In Italian, a three way place contrast exists among nasals, both initially and intervocally, independent of stress. Some examples are given in (8).

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1Palatals have two possible representations: they may be primary palatals with a coronal dependent indicating palatality, or they may be primary coronals or dorsals with a secondary coronal articulation. My choice for Genovese is synchronically arbitrary, but the same structure will be argued for in Italian (see footnote 2). Historically, the representation of Genovese /n/ as a coronal (i.e. placeless) with secondary articulation is better motivated, since /n/ derives from n+j sequence.
(8) Italian nasals

\[ /\text{m/} \quad /\text{n/} \quad /\text{n}/ \]

[m]are sea \quad [n]aso nose \quad [n,\text{o}]mo gnome
ra[m]o branch \quad ra[n]a frog \quad ra[n]lo spider

Given the background assumptions outlined in section 1, the underlying representations of the Italian nasals are as shown in (9).

(9)

\[ /\text{m/} \quad /\text{n/} \quad /\text{n}/^2 \]

Place \quad Place \quad Place

| Peripheral | V-Place |

In (9), /n/ is the symbol for the placeless nasal. I would like to remind the reader that I use the symbol /N/ when the underlying bare Place node translates into surface variability, and this has not been shown yet for Italian.

The three-way contrast in (9) is neutralized in coda position, where the only nasal available does not display any independent Place structure, being homorganic to the following consonant.

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2The representation of the Italian nasal palatal as a coronal with secondary place of articulation is here crucial. According to the Node Activation Condition (NAC) (Avery and Rice 1989), which I assume, the presence of more than one series of coronals triggers Coronal activation on all of them, including the plain coronals, where no Coronal-dependent is underlingly specified. This is because a distinction among coronals is only possible through Coronal-dependents that, obviously, trigger the presence of Coronal underlingly. With respect to this, palatals are ambiguous. If the palatal is represented as a primary palatal, the presence of a Coronal-dependent forces Coronal specification on both the palatal and the plain coronal. If the palatal is represented as a coronal with secondary place of articulation, though, (and this is also suggested in Italian by the historical development that lies behind it: nj \( \rightarrow \) n), no Coronal specification is necessary under either C-Place or V-Place. This is because in this case the distinctive force is yielded by the V-Place itself, absent in the plain coronal. As a result of this no Coronal specification is triggered on the UR of the plain coronal either. Given the fact that in Italian the plain coronal undergoes homorganic assimilation, it is crucial that its representation be placeless. Only in this way the bare Place node can function as the target of leftward spreading of Place-dependents. Given the NAC, the representation of the palatal nasal as in (9) does not trigger any Coronal specification on the plain coronal; on the contrary, the representation of the nasal palatal as a primary palatal would force coronal activation on the plain coronal, thus blocking the assimilatory process. The blocking effect would follow from the assumption that delinking is not triggered by spreading, but must be independently motivated.
(10) Italian homorganic nasal assimilation

<table>
<thead>
<tr>
<th>a</th>
<th>b</th>
<th>in Holland</th>
<th>[n]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a[ŋk]e</td>
<td>also i[n + k]anada</td>
<td>in Canada</td>
<td>[ŋk]</td>
</tr>
<tr>
<td>pa[ŋʃ]a</td>
<td>belly i[n + k]ina</td>
<td>in China</td>
<td>[ŋʃ]</td>
</tr>
<tr>
<td>ve[nt]o</td>
<td>wind i[n + t]urchia</td>
<td>in Turkey</td>
<td>[nt]</td>
</tr>
<tr>
<td>bo[mb]a</td>
<td>bomb i[n + b]rasile</td>
<td>in Brasil</td>
<td>[mb]</td>
</tr>
</tbody>
</table>

In (10), homorganic nasal assimilation applies word internally in (a), across morpheme boundaries in (b). The latter set of data clearly suggests that /n/, and not /m/ or /ŋ/, is the nasal undergoing assimilation. This is because when no regressive Place assimilation occurs, due to the presence of a following vowel, the nasal is realized as a coronal. The data in (10), then, strongly support the view that the only surface plain coronal nasal in Italian is in fact underlyingly placeless, as captured by the representation in (9), and in complementary distribution with the homorganic nasals in coda position. Given its surface variability, this placeless nasal is better referred to by /N/, whereas I understand /n/ as a better representative of an underlyingly placeless nasal always realized via implementation of Coronal, as well as the symbol for an underlying coronal, like in Genovese. Notice that in Italian only clitics can end in a consonant, which is exceptionless coronal. This suggests the unmarked status of Italian coronals in general. As to the underlying placeless nasal, implementation of Coronal on the bare Place node occurs in onset position realizing a surface coronal; in coda position, where the implementation of the default feature fails, the bare Place node becomes the target of regressive spreading, determining the manifold variability of the surface realizations of /N/.

2.2.3 Summary

To sum up, in Italian, unlike in Genovese, surface [n] is always the output of the implementation of the feature Coronal on the underlying placeless nasal /N/. Like in Genovese, the variability of /N/ manifests itself through the implementation or lack thereof of Coronal. In both systems, Coronal is implemented in onset position, but fails to be implemented in coda position. Genovese and Italian differ, however, in the way the placeless nasal is realized in codas: in Genovese it still surfaces as placeless and is interpreted as velar; in Italian (dependent) Place structure is provided via regressive Place assimilation.

Let us now turn our discussion to the inventory in (7), i.e. Genovese. Unlike in Italian, in a system like Genovese a coronal nasal contrasts with a placeless nasal; this contrast triggers the presence of Coronal underlyingly, so that the two nasals can
be distinguished. In this case, the presence of Coronal is not redundant. In a system like this, two different surface coronals might show up: the unavoidable realization of the underlying coronal (6b), and one of the possible realizations of the placeless nasal, that may display some variability (e.g. coronal/homorganic like in Italian) including the coronal/velar alternation (6a).

2.2.4 /ŋ/ and the Genovese melody-prosody interface

What remains to be explored now, is what circumstances determine the implementation of Coronal rather than the interpretation of the bare Place node in (6a), and vice versa.

Consider now once more the alternations in (6a), one example of which is the pair sénu /senému. We have already established that the underlying nasal is the placeless /N/. Nonetheless, these forms are puzzling: under what circumstances other than in coda position does /N/ fail to undergo implementation, resulting in surface [ŋ]? In order to answer this question we need to remember that [ŋ], beside in coda position, only shows up in a very restricted environment: in intervocalic position if the preceding penultimate vowel is stressed. The fact that [ŋ] never shows up in word initial position suggests that [ŋ] is in fact an ill-formed onset. If this is true, how is it possible that [ŋ] is well formed in intervocalic position? I will argue that a possible answer is that intervocalic [ŋ] in (6a) is amabisyllabic. This is also suggested by the necessary presence of a stressed short vowel preceding it. If intervocalic [ŋ] is amabisyllabic, the generalization can be made that [ŋ] is found exclusively in coda position. Is the view that Genovese intervocalic [ŋ] is amabisyllabic and that [ŋ] is only licensed in coda position tenable? This is my next object of inquiry.

2.2.4.1 Genovese minimal weight requirement 1: heavy penults

Forner 1975 reports that in Genovese vowels are predictably long when both stressed and before a particular class of segments: g, gʷ, v, z, ñ, r, r. (See historical appendix.)

<table>
<thead>
<tr>
<th></th>
<th>lé:zu</th>
<th>I read</th>
<th>pág:u</th>
<th>I pay</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>tró:vu</td>
<td>I find</td>
<td>páz:ë</td>
<td>peace</td>
</tr>
<tr>
<td></td>
<td>sa:ru</td>
<td>I close</td>
<td>ú:e /úře/</td>
<td>hours</td>
</tr>
</tbody>
</table>

---

3 I assume here a modified version of the Node Activation Condition (Avery & Rice 1989). According to MNAC the activation of Coronal underlyingly is not only triggered by the underlying specification of distinctive Coronal-dependents (see footnote 2), but also by the presence of a placeless segment contrasting with a plain coronal.

4 Theoretically a four-way place contrast can be achieved with coronal unspecified in UR. This would entail the specification for Dorsal and two surface [ŋ]: a dorsal and a velar. I am not aware of a language where such a four way Place distinction exist.
I argue that the vowel lengthening process in (11) has the specific purpose of satisfying a prosodic requirement, that is to say, that stressed syllables be minimally bimoraic. This would also provide a reasonable explanation for why these consonants do not have a lengthening effect on the preceding vowel when the vowel is unstressed. Stressed syllables are bimoraic, unstressed syllables are not. As we will see in section 2.2.4.2, the bimoraic requirement will have to be restated at the foot level. However, there is no clue so far that suggests this, and for now I will maintain that stressed syllables in Genovese must be heavy. While the stressed syllables in (11) are clearly bimoraic because of the long vowel, when we examine other forms, the bimoraicity is less evident. In (12), the consonants following the stressed vowels fail to lengthen them.

(12)  
báku stick  gátu cat  
lénu wood  gôba hump  
sýpa soup  núsu red

The bimoraicity in these forms must be met in a different way. In open syllables, this is achievable if the following consonant is ambisyllabic, actually closing the preceding syllable. All consonants other than g, gʷ, v, z, ɾ, r, then, can project an additional mora when required by the bimoraic constraint, and close the preceding syllable. The "moraic" consonants include N, allowing the generalization that [ŋ] is restricted to coda position. In the light of this, consider now how (6a) and (6b), partially repeated as (13a) and (13b), are syllabified.

(13)  
a) sé[ŋ]u/se.[n]ém.mu  b) inŋ-gá[n.n]u/ŋ-ga.[n]ém.mu

In (13a), intervocalic ŋ in the first member of the pair is preceded by a stressed vowel, therefore it must be ambisyllabic to create the bimoraic syllable. The ambisyllabic status licences the occurrence of [ŋ] in intervocalic position because, in spite of the ill-formedness of [ŋ] as an onset, [ŋ] is well-formed as a coda. The placeless nasal is then realized with the minimum effort, that is to say, by interpreting the bare Place node without filling in the default feature. Its occurrence in the coda of the stressed syllable satisfies the minimal weight requirement of stressed syllables.

(13a.i)
By contrast, in the second member of the pair in (13a), the stress switch causes the same nasal to be in pretonic position, where ambisyllabicity is not required. The nasal is not both an onset and a coda at the same time. Since [ŋ] is an ill-formed onset, Coronal must be filled in, and the placeless nasal surfaces as [n].

(13a.ii)

In (13b) the nasal is underlyingly specified for Coronal. As a result, no alternation between interpretation and implementaion arises. Notice that in the first member of the pair the coronal nasal is also ambisyllabic; in this case [n] is licensed by virtue of being a well-formed onset, in spite of its ill-formedness as a coda. Also in this case, the occurrence of the nasal in the coda of the stressed syllable satisfies the requirement that stressed syllables be bimoraic.

(13b.i/ii)

At this point, if the ambisyllabic approach is correct, the generalization can be made that [ŋ] is only licensed when filling a coda.

The conclusion just made raises a related question: why is [ŋ] only well formed as a coda? Why is it an ill-formed onset? I propose that onsets, as well as codas, may be subject to complexity restrictions. Unlike codas, though, that display maximal complexity restrictions, onsets display minimal complexity restrictions. So, while codas are not allowed to exceed a certain amount of structure—complexity-markedness, onsets, in a complementary fashion, have the opposite requirement: segments below a certain complexity threshold are not allowed in onset position. This is stated in (14).
(14) Genovese onset minimal complexity requirement:
- Onsets must have Place specification

The requirement expressed in (14) rules out the possibility of [ŋ] showing up in onset position, given that both the underlying and surface representations are placeless. That not all segments are well-formed as onsets appears to be the case in many Australian languages, where segments that are low on a markedness scale are often ruled out in word-initial position. (See Hamilton 1993)

2.2.4.2. Genovese minimal weight requirements 2: the minimally bimoraic foot

Our analysis of the Genovese velar nasal / coronal nasal alternation, crucially relying on our analysis of the Genovese prosodic system, has to account for one last piece of the puzzle. As pointed out at the very beginning, a preceding stressed vowel is a necessary but not sufficient condition for /N/ and /n/ to contrast; it is also necessary that the stressed vowel be in penultimate position. If the stressed vowel is in antepenultimate position the contrast is neutralized and only [n] shows up.

(15) mánigu handle *manigu
mekániku mechanic *mekániku

How can we account for this? The fact that [ŋ] never shows up after an antepenultimate stressed vowel seems to suggest that a stressed vowel in that position does not need to be followed by a consonant in the coda even when short, which translates into saying that the process deriving heavy syllables via ambisyllabicity argued for above does not apply in third to last position. If this is true, we can readily explain why the contrast [n]/[ŋ] is neutralized in favor of [n]. Once ambisyllabicity is ruled out, [ŋ] can no longer occur in intervocalic position where it would be syllabified exclusively as an onset. Given the onset minimal complexity constraint, this is not possible, and the placeless nasal has to be realized via implementation of the feature Coronal, surfacing as [n].

If the process that derives heavy syllables via ambisyllabicity does not apply in third to last position, we should expect the complementary process of vowel lengthening before nonmoraic consonants to fail to apply as well. This prediction is borne out by the data.

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5 In Hamilton 1993, markedness is an intrinsic value of segments; it does not follow from structure.
(16)  a  
I[u:vtu]  wolf  
k[ɑ:ɾu]  wagon  
[ã:ɾba]  grass  

b  
z[ũ]venu  young boy  *zũ:venu  
k[ã:ɾegu]  I load  *kã:ɾegu  
p[ẽ]rtega  pole  *pẽ:ɾtega  

The fact that antepenultimate stressed syllables need not be heavy accounts for the neutralization of the placeless and the coronal nasal. The question remains, though, why penultimate and antepenultimate syllables pattern in a different way with respect to the minimal weight requirement. Obviously, the generalization made above that stressed syllables must be heavy no longer holds in the light of the new data. At the same time, it is quite clear that some sort of weight requirement is involved at some level of phonological structure. A closer look at the data suggests that the weight requirement be stated at the foot level rather than at the syllable level. Let us now explore this avenue to see where it leads us.

Genovese stressed is placed, unpredictably, on either the penult or the antepenult. Antepenultimate stress is quite rare compared to penultimate stress, and can be regarded as lexically marked. (See Forner 1975). If we compare the forms in the first and the second column in (16), we can exclude iambs in favour of trochees straightaway. Iambs in forms like lu:vtu in the first column can only be assigned under the assumption that the ending is extrametrical. However, if the last vowel is extrametrical, iambs are ruled out in forms like zũ:venu. We are left, then, with trochees and with the choice to make whether the last vowel is extrametrical or not. Let us first consider the possibility that the last vowel is not extrametrical. This raises a number of problems. Under this assumption, surface trimoraic trochees are derived from underlying bimoraic ones. This contradicts Hayes’ iambic/trochaic law (see Hayes 1995) that, paraphrased, states the the ideal trochee is bimoraic while the ideal iamb is trimoraic. This does not exclude the existence of underlying trimoraic trochees that surface as such, of course. However, we would expect derived bimoraic, and not derived trimoraic, trochees. Even overcoming this kind of problem, still a major inconsistency would arise, namely that the foot built around the penult must be trimoraic, while the foot built around the antepenult must not, as the data in (16) show. These difficulties do not arise if we assume that the last vowel is extrametrical and that the foot is minimally bimoraic. In this case the left strong foot built around the stressed penult starts as monomoraic and since the ending is not visible a mora is recruited either via vowel lengthening (17a) or via ambisyllabicity (17b).
(17) a vowel lengthening  
lúv(u) → lú:vu  wolf
kár(u) → ka:ru  wagon

b ambisyllability  
láN(a) → lá:ña  wool
mán(a) → má:nna  manna
dád(i) → dá:di  dice

(17a.i) /lúv/ → [lú:vu]

(17b.i) /láNa/  [lá:ña]

In the case of antepenultimate stress, though, no repair strategy needs to be invoked to fulfill the minimal foot size, given that an underlying mora to the right of the strong branch of the foot is available. Then, both vowel lengthening (18a) and ambisyllabicity (18b) fail.

(18) a no vowel lengthening  
zúvenu [zúve]nu  young man
pértega [pért]ega  pole

b no ambisyllabicity  
máNigu [máni]gu  handle
mekáNiku me[kani]ku  mechanic
Given that ambisyllabicity serves the specific purpose of fulfilling the bimoraic foot requirement, ambisyllabic consonants are found only after stressed penults, not after stressed antepenults: this, in turn, translates into a neutralization of the /n/-/N/ contrast in stressed antepenults, totally dependent, in its surface realization, on the ambisyllabic realization of intervocalic consonants; once the prosodic conditions on bimoraicity are met, ambisyllabicity is not available and, as a result, contrasts related to it neutralize.

3 SUMMARY

In this paper I have examined an interesting case of coronal/velar alternation in Genovese Ligurian. Genovese has been shown to have an intervocalic contrast after stressed penults between [ŋ] and [n]. Intervocalic [ŋ] is realized as [n] in other positions, whereas intervocalic [n] does not show any alternating pattern. Therefore, surface [n] arises from two distinct underlying nasals. The [n/ŋ] alternation has been analyzed as the surface realization of an underlingly placeless nasal /N/. According to the Default Variability Hypothesis, the surface alternation is the result of the implementation or lack thereof of the universal default feature Coronal. The failure of Coronal implementation leads to interpretation of the bare Place node as a velar. The
processes of implemetation or interpretation have been shown to be intimately related to the prosodic level. The generalization has been made that the placeless nasal is always realized as [ŋ] in codas, and this realization is possible only in this position; in this position all Genovese nasals are neutralized to [ŋ], and intervocalic [ŋ] has been proposed to be in fact amabisyllabic, thus to be licensed in coda position as well. Ambisyllabic in Genovese has been argued to fulfill the requirement that the trochee be minimally bimoraic. Given the extrametricality of the final vowel, ambisyllability is derived after stressed penults to satisfy the bimoraic minimum; after stressed antepenults, on the other hand, ambisyllability is unnecessary, due to the presence of an underlying mora to the right of the strong branch of the foot. This accounts for the one last missing piece of the puzzling [n]/[ŋ] alternation: the fact that intervocalic N never surfaces as [ŋ] after a stressed antepenult. This results in neutralization between /n/ and /N/.

4 HISTORICAL APPENDIX: the lengthening effect of Genovese g, gʷ, v, z, ʒ, r, ɾ and the ambisyllabic behaviour of the other Genovese consonants.

The somewhat peculiar pattern of Genovese consonants receives a straightforward historical explanation. Genovese consonants have basically preserved their historical prosodic status: in particular, historical geminates, after undergoing degemination, have preserved their ambisyllability after a stressed penult; given the extrametricality of the last vowel, the maintenance of the historical prosodic status of the geminates satisfies the requirement that the trochee be bimoraic. However, the ambisyllabic behaviour of the historical geminates has not been maintained after a stressed antepenult. This is because in this case the second mora of the bimoraic trochee is provided by the underlying moraicity of the penultimate vowel. Historical nongeminates have also preserved their prosodic status, still failing to close the preceding syllable and triggering the lengthening of the preceding stressed penult to satisfy the bimoraic minimum. To sum up, the Genovese nonlengthening consonants are, with one exception (i.e. /m/) historical geminates; the lengthening consonants (g, gʷ, v, z, ʒ, r, ɾ) are, with one exception (i.e. /ɾ/) historical nongeminates.

Let us now take a slightly closer look at the historical development of the Genovese consonants. Among the lengthening consonants, the obstructs g, gʷ, v, z, ʒ in intervocalic position are the historical development of a process of lenition that affected intervocalic obstructs. By contrast, the other obstructs available in the system are the result of the other historical processes already mentioned: degemination. So, for example, in the labial place of articulation, Genovese /-v-/ is the historical development of /-p/-, /-b/-, and /-f/-, whereas Genovese /-p/-, /-b/-, and /-f/- are the historical development of /-pp/-, /-bb/- and /-ff/-, respectively. Interestingly enough, the two historical processes combined prevented the development of phonemic vowel length, creating an interesting one-to-one relationship between melodic entities and their (derivable) prosodic values. So, for example, if degemination alone had applied, we would have a lengthening and a nonlengthening /p/: more realistically, we would have a single /p/ preceded by a vowel unpredictably long or short. However, due to the parallel process of lenition, the expected lengthening /p/ has turned into a /ɾ/, still making it possible to predict the length of the preceding vowel on the basis of the melodic content of the following consonant.

As for the nasals, none of them has a lengthening effect on the preceding vowel. If what has been said above is true, all of them should stem from geminates. This turns out to be true for all but the labial nasal. The palatal nasal is historically bisegmental, having arisen from /nj/. The coronal nasal is the historical /nn/. The placeless N goes back to Latin /n-/, but it is documented to have geminated in
the recent history of Genovese and to have been realized as [m] before general degemination occurred. By contrast, Genovese /m/ can be traced back to both /m/ and /mm/. This should result in two bilabial nasals, a lengthening and a nonlengthening one. Genovese /m/, however, never shows a lengthening effect, patterning, probably by analogy, as all other nasals do.6

We are now left with the liquids. Genovese 1 is found in word initial and in intervocalic position. In the latter case, it never has a lengthening effect. This is because intervocalic 1 always goes back to -ll- in Genovese, whereas the historical -l- (as well as -IC), underwent rhoticization. Again, Genovese 1 does not belong to the class of lengthening segments because it has retained the prosodic value of its historical antecedent, namely ambisyllabicity. As to the two rhotics, things are slightly more complicated. The phoneme /r/ is typical of Ligurian dialects. It is an approximant palatal rhotic that in Genovese is realized as zero but is preserved in more conservative Ligurian dialects. In intervocalic position, this consonant stems from -l- and -r-, thus, not surprisingly, it has a lengthening effect when the preceding vowel is stressed. By contrast, intervocalic /r/, an apico dental trill, originates from /-rr-/ and, as such, should not display any lengthening effect on the preceding stressed vowel. In spite of its historical development, however, this r lengthens a preceding stressed vowel. Like /m/, it is possible to put forward the hypothesis that /r/ behaves like /r/ by analogy. What is most surprising, though, is the fact that /r/, the only liquid showing up in coda position, displays a lengthening effect even in this case (see (16b)), when it would be expected to close the syllable, and, as a consequence, not to trigger any lengthening. This problem does not arise for the other lengthening segments because, given their historical development and their sonorancy status, they never surface in coda position.

One more word about ambisyllabicity needs to be said. Unlike the historical gemination it stems from, ambisyllabicity is not underlying, rather derivable. It is performed with the specific purpose of fulfilling prosodic requirements and, to my knowledge, it is predictable in two different ways. In a system like Genovese, where degemination and lenition interacted, ambisyllabicity is a property of certain segments: when required by the prosody, Genovese /p/ is always ambisyllabic, whereas /v/ can never be. In a system like Dutch, where only degemination applied, ambisyllabicity is not a property of specific segments, rather it is related to the phonemic length value of the preceding vowel. (See Kager 1989, Booij 1995).

References


6 While the prosodic opposition n/nн was turned into a place opposition (n/N), the prosodic opposition m/mm was lost after gemination occurred. This is obviously due to the "lack of phonetic space" among sonorants. Why the coronals took precedence over the labials maintaining the contrast is an interesting and challenging question, perhaps related to relative complexity of segments.


