VOEVEL LENGTHENING IN MILANESE

PILAR PRIETO I VIVES
Universitat Autonoma de Barcelona

0. Introduction

Modern Milanese displays a very interesting set of vowel length contrasts, with long vowels usually surfacing in word-final stressed syllables before underlyingly voiced consonants: [næ:v] - [næ:f] 'new.ms' vs. [næ:v] 'new.f'; [vɪ:v] - [vɪ:f] 'alive.ms' vs. [vɪ:v] 'alive.f'. Recent analyses of Milanese synchronic vowel length alternations have relied on a combination of a Bimoraic Enforcement condition (every stressed syllable has to be heavy) together with a moraic distinction between voiced and voiceless consonants. However, these analyses leave unexplained the fact that vowel lengthening occurs exclusively in the final syllable of the word and not in syllables in penultimate and antepenultimate positions. The present article offers a different interpretation of these alternations and claims that the distribution of short and long vowels in this dialect can be successfully accounted for by resorting to the following optimization constraints (Prince 1990, McCarthy & Prince 1993, Mester 1994).

(1) a. FT-BIN: Feet should be analyzable as binary
     b. HNCC: A higher sonority nucleus is more harmonic than one of lower sonority
     c. FILL: Syllable positions are filled with segmental material

The first principle, FT-BIN, is one of the essential constraints at play in this proposal and motivates the fact that monomoraic feet are prone to be repaired. In the trochaic system under consideration, monomoraic feet are found in word-final

* The article has benefited from my participation in the following research groups: 'Laboratori de Fonètica-IEC' (project 1997SGR00290) and 'La estructura de las unidades prosódicas' (project PB-96-1199-C04-04). I would like to thank Lori Repetti and an anonymous reviewer of this article for very helpful comments on an earlier version.
stressed syllables, precisely the syllables that tend to be lengthened. The second constraint, HNUC, evaluates which segment should rescue a given moraic unit, deciding the cases in which the vowel will be lengthened. Thus, it will be shown that an optimality approach can straightforwardly account for a phenomenon that was not satisfactorily handled within derivational models. Also, the present analysis provides further evidence of the cross-linguistic applicability of the three constraints employed.

The article is organized as follows. The first section presents a detailed description of the distribution of short and long vowels in Milanese. Section 2 revises previous analyses of the Milanese facts, and section 3 presents an optimality analysis of the data.

1. Vowel Length Distribution in Milanese

Milanese is a Gallo-Italian dialect spoken in the northern Italian province of Milan (Lombardy region) which belongs to the Western Lombard dialectal area. As in other northern Italian dialects, vowel length is distinctive in Milanese. The set of vowels that can appear in stressed positions is shown in (2),

\[
\begin{align*}
\text{a} & \quad \text{e} & \quad \text{æ} & \quad \text{ø} & \quad \text{ʊ} & \quad \text{u} \\
\text{e} & \quad \text{e} & \quad \text{æ} & \quad \text{ø} & \quad \text{ʊ} & \quad \text{u} \\
\text{æ} & \quad \text{e} & \quad \text{æ} & \quad \text{ø} & \quad \text{ʊ} & \quad \text{u} \\
\text{ø} & \quad \text{e} & \quad \text{æ} & \quad \text{ø} & \quad \text{ʊ} & \quad \text{u} \\
\text{ʊ} & \quad \text{e} & \quad \text{æ} & \quad \text{ø} & \quad \text{ʊ} & \quad \text{u} \\
\text{u} & \quad \text{e} & \quad \text{æ} & \quad \text{ø} & \quad \text{ʊ} & \quad \text{u} \\
\end{align*}
\]

In (3) we find minimal (and quasi-minimal) pairs illustrating vowel length contrasts in stressed word-final position. The examples in (3b) show a case of morphologically conditioned lengthening: while the infinitive form of a given verb ends in a final short vowel ([por'ta] 'to bring', [fim'i] 'to finish'), the masculine past participle form ends in a final long vowel ([por'ta] 'brought.ms', [fim'i:] 'finished.ms'). (For presentation of the data, I follow IPA conventions throughout the article.)

1 According to Merlo (1960: 2) and Sanga (1984: 8), Western Lombard dialects comprise the following areas: the provinces of Milan, Como, Varese, Sondrio and the northern part of the Pavia province (plus the Canton Ticino in Switzerland and the eastern part of the Novara province). Linguistic features characterizing Western Lombard dialects as opposed to Eastern dialects are: 1. Proto-Romance [ı] became [y]; 2. Word-final [r, l] were deleted after tonic vowels; 3. Vowel length is distinctive in word-final stressed positions (Sanga 1984:60-61).


Vowels are always short in unstressed positions, as the derived words in (6) show.

---

In unstressed positions, vowels are always short:

\[
\begin{align*}
i & \quad y & \quad u \\
\end{align*}
\]

The data in (5) illustrate the process of vowel reduction in Milanese. When in unstressed position, /e, æ, ø, u/ become [e, u, u], respectively, and the rest of the vowels (/a, i, u, y/) maintain their vocalic quality (Pavia 1928:16, Nicoli 1983:46).

\[
\begin{align*}
[ga'nu:sa] & \quad \text{'jaw'} & \quad [ga'n/:sa] & \quad \text{to eat eagerly'} (N:37) \\
[as'en] & \quad \text{'donkey'} & \quad [as'en] & \quad \text{'donkey.dim'} (N:110) \\
[ba'lu:sa] & \quad \text{'artificial'} & \quad [ba'lu:~set:] & \quad \text{'artificial.dim'} (N:47) \\
[te're] & \quad \text{'earth'} & \quad [te're] & \quad \text{'terrain'} (N:50) \\
[pe'si] & \quad \text{'fish'} & \quad [pe'si] & \quad \text{'fish.dim'} (N:38) \\
[be'le:za] & \quad \text{'beautiful'} & \quad [be'le:~a] & \quad \text{'beauty'} (N:38) \\
[fu'let] & \quad \text{'boy'} & \quad [fu'let] & \quad \text{'boy.dim'} (N:46) \\
[v'net] & \quad \text{'wine'} & \quad [v'net] & \quad \text{'wine.dim'} (N:46) \\
[u'si] & \quad \text{'cough'} & \quad [u'si] & \quad \text{'to cough'} (S:296) \\
[mu'seta] & \quad \text{'movement'} & \quad [mu'set:a] & \quad \text{'movement.dim'} (N:50) \\
\end{align*}
\]
Apart from these underlying contrasts, Milanese displays a productive alternation between long and short vowels. Vowels surface as long when in word-final stressed syllables before underlyingly voiced obstruents (7a) and as short when in stressed penultimate positions (7b). The examples in (7b) also show the optionality of the rule of devoicing of word-final obstruents (Nicolli 1983:52-53; Montreuil 1990:45).

    [vi:v] ~ [vi:v] 'alive.ms' [vi:v] 'alive.fs' (S:296)
    [tuːz] ~ [tuːz] 'boy' [tuːza] 'girl' (N:63)

(8) exhibits the difference in behavior between vowels preceding word-final voiced obstruents (lz, g, d, gl) and vowels preceding word-final voiceless obstruents (lf, s, t, k). While vowels preceding voiced obstruents are long (8a), vowels preceding voiceless obstruents are short (8b). The examples listed below are from Nicoli (1983:45, 50), Sanga (1988) and Montreuil (1990:38).

(8) a. [nɛːz] ~ [nɛːz] 'nose' [nɛːza] 'to smell'
    [lɛːk] ~ [lɛːk] 'lake' [lɛːkən] 'lake.dim'
    [fiːɡ] ~ [fiːg] 'fig' [fiːgɛ:] 'fig tree'
    [reːd] ~ [reːd] 'net' [reːdən] 'net.dim'
    [seːt] ~ [seːt] 'thirst' [seːdən] 'thirst.augm'

As we have already mentioned, vowels are always short in penultimate position (9a) and in antepenultimate position (9b).

(9) a. [pevə] 'paver' (Sal:75-4)
    [fevə] 'fever' (Sal:75-4)
    [nuvə] 'new.fs' (S:296)
    [vi:v] 'alive.fs' (S:296)
    [tuːza] 'girl' (N:63)
    [nuːsə] 'movement' (N:50)
    [eːrə] 'earth' (N:50)
    [nulidə] 'frying pan' (N:38)

b. [strələs] 'gypsy' (N:47)
    [unuːka] 'unique.fs' (N:47)
    [peɡuə] 'sheep' (N:38)
    [nulidə] 'cloud' (N:83)

Even though the general trend for word-final voiced consonants is to trigger lengthening of preceding vowels, underlying /l/ and /n/ behave in a special way. Before these consonants, vowels can be either long or short. (10a) and (10b) show instances of long and short vowels, respectively, before word-final [l].

(10) a. [peːl] 'hair' (M:39; S:291) b. [peːl] 'skin' (M:39; L:208)
    [feːl] 'faulth.ms' (S:292) [fel] 'do it.3s' (S:292)
    [mɛːl] 'mass' (S:295) [maːl] 'soft.ms' (S:295)
    [koːl] 'strainer' (S:295) [koːl] 'neck' (S:295)
    [fiːl] 'son' (G:25) [fel] 'style' (S:292)
    [kaːl] 'drop, fall' (M:39) [kal] 'com' (M:39)
    [baːl] 'bales' (L:208) [bal] 'dance' (L:208)

3 Similar vowel length alternations obtain in Friulian. Vowels are long before underlyingly voiced consonants and short before voiceless consonants. One of the major differences between Milanese and Friulian is the obligatoriness of the final consonant devocing rule in Friulian. (All data are taken from Hualde 1990.)

[laːk] 'lake' [haːgrən] 'lagoon'
[naːt] 'ship' [naviːgən] 'to navigate'
[faːmoːz] 'famous ms' [faːmoz] 'famous fs'
[laːd] 'gone.ms' [læd] 'gone.fs'
[luːv] 'love' [luːvən] 'love.dim'

But: [maːt] 'mad, crazy.ms' [maːt] 'mad, crazy fs'

4 The different outcome is due to the etymological origin of the consonant. As Sanga (1988:291) points out, "avanti liquida semplice originaria abriamo sempre vocale lunga."
The examples in (11) illustrate the fact that vowels can be long or short before word-final underlying /n/. Like in the case of final /l/ (10), final /n/ can be preceded by a short vowel (11a) or by a long nasalized vowel, in which case the nasal consonant is also deleted (11b).

\[(11)\] a. '[kan]’reed.p' (cf. [kan]’reed.m' (Ch:206))  
'b. '[k̚]’dog' (cf. [k̚]’dog.m' (Ch:200))

'[pan]’cloth' (cf. [pa’nos]’cloth.m' (Ch:1068))  
'[don]’woman' (cf. [do’nosit]’effeminate (Ch:436))

In contrast to the behavior of vowels preceding final /l/ and /n/, vowels preceding word-final /l/ are always long (12). Vowellengthening before /r/ might have been due to a generalized phonetic effect caused by syllable-final rhotics, a common process reported in many northern Italian dialects (Prieto 1994).

\[(12)\] [per]>’pear’ (S:293)  
[fe]’iron’ (S:37, G:255, Sal:37)  
[kar]’cart, dear.m’ (G:255, S:292)  
[sor]’soft.m’s’ (S:293)  
[toz]’tower’ (G:246)  
[doz]’(ti) burnt (S:291)  
[tsr]’hour’ (S:292)  
[do[tsr]’pain’ (N:54)

Vowels before word-final consonant clusters can also be long or short, depending on the voicing properties of the cluster. In general, vowels are short before voiceless clusters [sk, st, stʃ] (13a), and vowels tend to be long before clusters consisting of a liquid plus an obstruent (13b). In the latter case, we find some degree of variation ([kyr]~[kyr]: ’short.m’s; [kyr]: ’curved.m’s; see Sanga 1988:192, 293). Again, vowels in this environment are short when in penultimate syllables: [a:lt]’tall.m’s’ / [a:lt]’tall.f’s, [a:lt]’yellow.m’s’ / [a:lt]’yellow.f’s.

\[(13)\] a. voiceless cluster

[fe:st]’bottle’ (M:40)  
[fe:]’risk’ (S:293)

[b]’roasted.m’s’  
[past]’grazed.m’s’

[i:]’trunk’ (M:40)  
[past]’pounded.m’s’

b. voiced cluster

i. long vowel

[p:oa]’pig’ (S:293, P:35)  
[se:rk]’circle’ (G:255)

[ka]’body’ (P:35)  
[spa]’aspargus’ (P:32)

[a:ve:rt]’open.m’s’ (P:33)  
[ne:rt]’dead.m’s’ (P:35)

[fo:l]’scythe’ (S:84:63, P:35)  
[ka:]’hot.m’s’ (S:84:62)

[ne:vt]’nerve’ (S:293, P:33)

[lar]’long.m’s’ (N:53, S:292)

[ver:d]’green.m’s’ (B:251, S:293, G:250)

ii. short vowel - long vowel

[kyr]: [kyr]’short.m’s’ (S:84:62)

[kyr]: [kyr]’curved.m’s’ (S:84:62)

iii. short vowel

[sf:st]’strings’ (S:84:62)

[pl:]’wrist’ (S:84:62)

[vul]’fox’ (S:84:62)

[ap]’blind.m’s’ (N:51, P:35)

[dis:tyr]’trouble’ (S:293)

[ha:rt]’[ha:rt]’thrust’ (S:293)

5 The difference between long and short vowels in this environment can be traced back to the historical difference between geminate and simple nasals: short vowels show up before Latin geminates and long vowels before single nasals: CANNAS > [kan]’reed.p’ (S:292). CANE > [k̚]’dog’ (S:292). Milansese also displays a productive morphophonemic alternation between masculine and feminine forms ending in underlying /n/. While in the masculine form the final nasal deletes, in the feminine form it does not (examples are from Nicoli 1983:57, 8 and Lepschy 1978:208). [bal]:’good.m’s’ / [bon]’good.f’s, [pur]’opportunity’ / [pur]’opportunity.f’s, [kwa’d]’someone.m’ / [kwa’dyn]’someone.f’s. Syllable-final [a] is deleted in word-final stressed positions ([sla:kih]’mayor’, [golki]’swole.m’s’, [vki]’des’ eleven), but is never deleted in unstressed syllables ([son:ki]’donkey’, [kar]’hinge’, [ver]’virgin’, [de:vin]’young.m’s’, [a]rgen’’organ’, [ba:ritum]’baritone’, [a]rdun’’order’, [tran]’train’, [ande]’’antiquarium’, [ven]’dyda’’sold.f’s). According to Tuttle (1991), this pattern of nasal deletion is very common across northern Italian dialects. Other nasal consonants (bilabials and palatals) never delete or nasalize preceding vowels ([fym]’lamp’, [lam]’flame.p’, [lam]’man’, [sap]’sleep’, [rap]’wood’, [rap]’foot’, [rap]’ledge. Similarly, syllable-final [j] does not delete ([s]pajk]’therefore’, [pajk]’also’, [paj]’spade’, [pajk]’long.m’s’, [pajk]’five’, [pjapk]’white.m’s’, [sajg]’blood’). (The abovementioned examples are from Nicoli 1983:57-80).

6 According to Sanga (1984), there is a contrast between the behavior of high and non-high vowels before word-final liquid plus consonant clusters. While high vowels [i, y, a] are short, non-high vowels [e, a, a, a] are long. Although this might reflect a general tendency in Milanese, we have to admit that this is the only study that describes this behavior. Other descriptions of the phenomenon point out that vowels preceding such clusters are generally long. I only found the following counterexamples to Sanga’s observations: [per]’opened.m’s’ (G:255), [per]’loose’ (Sal:38, G:255), [fs]’false.m’s’ (N:62).
2. Previous Analyses of Milanese Vowel Lengthening: The Role of Weight and Sonority

Authors such as Salvioni (1884), Nicoli (1983) and Sanga (1988:294) have already acknowledged the role that voicing properties play in the synchronic vowel length alternations found in Milanese. (See Gokcen 1990 for a review.) Within the autosegmental framework, Montreuil (1990) has worked out the details of an analysis that relies on both the role of sonority and syllable structure.7 (See also Prieto 1993.) In order to account for the Milanese distribution of long and short vowels, Montreuil assumes that word-final voiced and voiceless consonants have different underlying weight properties. He argues that Milanese words have two possible lexical moraic representations, depending on whether long vowels show up in the phonetic representation.

(14) Moraic analysis of Milanese vowel length (Montreuil 1990:42)

1. Syllables with short vowels are underlyingly bimoraic (15a)
2. Syllables with long vowels have the underlying structure given in (15b)

(15) Milanese Underlying Coda Contrasts (Montreuil 1990:43)

a. Underlying representations

\[ \begin{array}{cccc}
\sigma & \sigma & \sigma & \sigma \\
\mu & \mu & \mu & \mu \\
\mu & \mu & \mu & \mu \\
\mu & \mu & \mu & \mu \\
\end{array} \]

k a s f y s p a n p e z

'case' 'moated ms' 'cloth' 'fish'

b. Bimoraic Stress Norm and Parasitic Delinking

\[ \begin{array}{cccc}
\sigma & \sigma & \sigma & \sigma \\
\mu & \mu & \mu & \mu \\
\mu & \mu & \mu & \mu \\
\mu & \mu & \mu & \mu \\
\end{array} \]

k a s k a s p a n p a n

k a z k a z p a n p a n

'case' 'moated ms' 'cloth' 'fish'

Montreuil claims that a process of Bimoraic Enforcement is active in Milanese, as Saltarelli (1983) and Chiarcia (1986) had proposed for Standard

Italian.8 By virtue of this constraint, every stressed syllable becomes bimoraic and, in a later process, the empty moraic unit is rescued by the vowel, thus becoming long. (16a) illustrates the underlying contrast between words with word-final non-moraic (voiced) and moraic (voiceless) consonants (/kaz/ vs. /kas/). (16b) shows the application of the Bimoraic Norm: indeed, the rule is only applicable in cases where final consonants are non-moraic (/kaz/ and /pan/). It cannot apply in the case of /kas/ because the bimoraic constraint is already fulfilled. Finally, (16c) shows the filling procedure whereby vowels link to the empty mora added through Bimoraic Enforcement.

(16) Montreuil's Analysis of Vowel Lengthening in Milanese

a. Underlying representations

\[ \begin{array}{cccc}
\sigma & \sigma & \sigma & \sigma \\
\mu & \mu & \mu & \mu \\
\mu & \mu & \mu & \mu \\
\mu & \mu & \mu & \mu \\
\end{array} \]

k a z k a s p a n p a n

b. Bimoraic Stress Norm and Parasitic Delinking

\[ \begin{array}{cccc}
\sigma & \sigma & \sigma & \sigma \\
\mu & \mu & \mu & \mu \\
\mu & \mu & \mu & \mu \\
\mu & \mu & \mu & \mu \\
\end{array} \]

k a z k a z p a n p a n

'case' 'moated ms' 'cloth' 'fish'

c. Filling Operation from the Vowel

\[ \begin{array}{cccc}
\sigma & \sigma & \sigma & \sigma \\
\mu & \mu & \mu & \mu \\
\mu & \mu & \mu & \mu \\
\mu & \mu & \mu & \mu \\
\end{array} \]

k a z n. a. p a n n. a.

d. Output

[kaz] [kas] [pan] [pan]

'house' 'case' 'bread' 'cloth'

---

7 Montreuil frames his analysis in a moraic view of the syllable structure. Even though he uses the moraic tier for syllabic representations, he points out that this assumption should not be interpreted as an argument against other possible intrasyllabic constituents.

8 Two phonological processes present in Standard Italian, open-syllable lengthening and Raddoppiamento Sintattico, have been generally interpreted as processes triggered by a rule of Bimoraic Enforcement on stressed syllables. The two processes represent two different repair strategies to reach an ideal bimoraic syllable, namely, lengthening of the stressed vowel or lengthening of the following consonant.
To account for the nasalization process in the word ‘bread’ (pronounced [ˈpɹæd] and not *[ˈpɹænd]), Montreuil introduces the rule of nasal spreading in (17), a process that applies to underlying representations and spreads nasality only ‘inside’ the mora.

(17) Nasal spreading: Nasalize inside the mora (Montreuil 1990:45)

The rule in (17) ensures that nasalization can only spread when the nasal consonant shares a moraic unit with the preceding vowel (see Montreuil’s representation of monomoraic /pan/ ‘bread’ in (15b)); however, the rule cannot apply to bimoraic /pan/ ‘cloth’, as the two segments in the rime license two separate moras. Finally, Montreuil’s analysis would also need a later rule of nasal deletion.

Even though the Bimoraic Enforcement approach correctly handles the basic facts of Milanese vowel length alternations, we should point out some of its weaknesses. On the one hand, the process of Bimoraic Enforcement predicts that all stressed vowels in open syllables should be long: instead, we find a clear contrast between vowels in word-final syllables (which are long) and vowels in penultimate and antepenultimate positions (which remain short). How, then, would words such as [ˈvəvə] ‘alive.fs’ or [ˈnəvə] ‘new.fs’ ever be able to avoid the Bimoraic Enforcement rule? We will argue that we are not dealing with a process of optimization at the syllable level (through Bimoraic Enforcement), but at a higher level, namely, at the level of the foot.

Montreuil’s analysis has another drawback. By lexically marking voiceless segments as moraic, such a proposal is in direct contradiction with the crosslinguistic tendency to represent sonorant and voiced consonants as having more prosodic weight than less sonorous segments. For example, in Classical Greek Osthoff’s Law had the effect of shortening long vowels before rimes containing sonorants: gnoː--nt-ese --> gnontes ‘knowing, nom.pl’ (cf., gi-gnoskoː); e-phon-e-n-c-nt --> ephanent- → ephanen ‘appear, aorist.pl’ (cf., e-phan-e-n). Both Zec (1988) and Steriade (1990) interpret the Greek example as an argument in favor of distinguishing sonorants from non-sonorant consonants with respect to weight licensing. As sonorants are mora-bearing in Greek, an application of the Bimoraic Enforcement principle forces vowels to shorten. Other instances of this type of behavior have been reported in languages such as Kwakiutl and Nootka, which treat CVS syllables (S=Sonorant) as heavy and CVO syllables (O=Obstruent) as light for stress assignment purposes. For more arguments dealing with stress attraction and stress assignment and shortening processes, see Zec (1988) and Steriade (1990).

Repetti’s (1992) analysis for Milanese and Friulian offers a solution to the ‘weight adequacy’ problem by positing that word-final voiced consonants (voiced obstruents and sonorants) can constitute degenerate syllables, in contrast with voiceless consonants, which cannot. She considers long vowels to be the underlying units (/baniːd/ [ˈbaniːdː] ‘bandit.ms’, /viːv/ [ˈviːvː] ‘alive.ms’), and postulates a rule of vowel shortening in non-final syllables in order to account for Friulian words such as [ˈbaniːde] ‘bandit.fs’, [ˈvivə] ‘alive.fs’. “In derived words, the consonant remains voiced (from the underlying form) and the vowel surfaces as a short vowel because of the metrical rule in Friulian that allows long vowels in final stressed syllables only” (Repetti 1992:170). This proposal recognizes the moraic properties of voiced and voiceless consonants and nicely accounts for cases where short vowels appear before word-final underlyingly voiced consonants: [ˈmiːtʃ] ‘half.ms’, [ˈmisˈθε] ‘half.fs’. Similarly, the proposal explains recent loanwords that never reflect a CVVC structure with a voiceless final C in the underlying representation (generally, the final consonant becomes voiced if it is preceded by a long vowel). Yet, the analysis is also stipulating a shortening process in open penultimate and antepenultimate syllables precisely where we would expect a lengthening effect. Such a rule runs against the well-known crosslinguistic tendency for vowels to lengthen in open stressed syllables. (For a more detailed analysis of the ‘degenerate syllable’ proposal applied to the Friulian data, see Repetti 1994).

Finally, Hualde’s (1990) analysis of the synchronic vowel length alternations in Friulian relies on the Final Devoicing rule in this language. This phonological process delinks the moraic unit of the voiceless consonants and the result crucially feeds a rule of compensatory lengthening: the empty mora is filled by the preceding vowel, making it bimoraic. However, this proposal completely loses its motivation when applied to Milanese, where the rule of Final Devoicing is only optional.

3. **Vowel Lengthening in Milanese: An Optimality Approach**

The analysis presented here is framed in the Optimality Theory (OT) defended by Prince & Smolensky (1993). As Archangeli & Pulleyblank (1994) put it, “the optimization hypothesis is that grammars prefer relations between representations that are defined in formal and grounded terms as optimal: synchronic and diachronic processes should gravitate towards optimal relations”. Following Prince & Smolensky (1993) and McCarthy & Prince (1993), I assume

---

9 As Repetti points out, the vowel shortening rule has some exceptions in Friulian, namely, a group of words where the long vowel comes from the deletion of the first consonant of an onset obstruent cluster: NIGRUI > [ni:ri] ‘black.ms’.
that Universal Grammar is defined by a set of constraints on structural well-formedness, and that these universal constraints are not inviolable. Each grammar resolves conflicts between universal constraints in a language-particular way: certain constraints can be prioritized over others in a strict dominance hierarchy in a way that a given constraint has absolute priority over all the others lower in the hierarchy.

The present analysis claims that vowel lengthening in Milanese is the result of a composite action of the following three constraints on representational well-formedness.

(18a) a. FT-BIN: Feet should be analyzable as binary
b. [Hhuc]: A higher sonority nucleus is more harmonic than one of lower sonority
c. [fill]: Syllabic positions are filled with segmental material

FT-BIN (18a) expresses the crosslinguistic tendency to avoid monomoraic feet. If this constraint is highly ranked, and requires that the smallest foot should be bimoraic. It has been repeatedly shown that monomoraic feet are very highly marked and tend to be repaired or reanalyzed in various ways. In Latin, for example, monosyllabic words consisting of only one short vowel are completely ungrammatical (cf. *fe ‘thing’, *spē ‘faith’, *re, *spē, even though they are stable in polysyllabicals (lege ‘he/she read. imp’, anima ‘soul’; Mester 1994). Mester (1994) has suggested the following prosodic well-formedness scale of foot types: "bimoraic trochees ([σµµ] or [σσ]) have the highest degree of harmony, followed by trimoraic trochees [σµµσ], and with monomoraic trochees [σ] ranking lowest on the harmony scale, i.e.: [µµµ] > [µµµ] > [µµ]." In the OT framework, the ban against monomoraic feet has been expressed with the so-called binarity principle (FT-BIN) formalized by Prince (1990) and McCarthy & Prince (1993).

(19) Foot Binarity (Prince 1990:6): FT-BIN: Feet should be analyzable as binary

As with most of the Romance languages, Milanese has a trochaic stress system. Stress falls in one of the last three syllables of the word, and typically antepenultimate stress is only possible when the penultimate syllable is light. This analysis assumes that word-final syllables in proparoxytones have to be marked as extrametrical at the lexical level.

(20) /nœːʋ/ ‘new ms’ /nœːʋa/ ‘new fs’ /uniŋka/ ‘unique fs’

In (21), two possible output candidates are evaluated against the input forms /nœːʋa/ and /uniŋka/. Being bimoraic, the candidates [nœːʋa] and [uniŋka] do not involve Ft-BIN, while [nœːʋa] and [uniŋka] do violate the constraint. Thus, the output forms that best satisfy this constraint are [nœːʋa] and [uniŋka].

(21)

<table>
<thead>
<tr>
<th>Input</th>
<th>Ft-Bin</th>
</tr>
</thead>
<tbody>
<tr>
<td>[nœːʋa]</td>
<td>*†</td>
</tr>
<tr>
<td>[uniŋka]</td>
<td>*†</td>
</tr>
</tbody>
</table>

In the case of oxytones, the difference between the behavior of vowels before voiced and voiceless obstruents cannot be obtained by resorting exclusively to the Ft-BIN requirement. Neither [nœːʋ] nor [nœːʋ] violate Ft-BIN, as the two moras can be filled, in one case by a long vowel ([nœːʋ]), and in the other by a short vowel and a consonant ([nœːʋ]). The same is true of pairs such as [myːf] and [myːf], as we can see in the following graphic representation.

(22)

\[
\begin{array}{ccccc}
\mu & \mu & \mu & \mu & \mu \\
\text{n œː v} & \text{n œː v} & \text{m yː f} & \text{m yː f}
\end{array}
\]

The difference between /nœːv/ and /myːf/ can be explained if we consider the following. First, let us assume that certain consonants at the end of the word contribute an underlying mora to the structure. Only voiced consonants will be able to license a moraic unit, with the exception of special cases like final /n/ or /l/, in line with the crosslinguistic observation that sonorous consonants tend to have more prosodic weight (Zec 1988, Steriade 1990).

(23)

\[
\begin{array}{cc}
\mu & \mu \\
\text{n œː v} & \text{m yː f}
\end{array}
\]

Second, the mora unit contributed by voiced consonants will have to be parsed into the structure. We argue that the principle called Nuclear Harmony
Constraint (HNUC) (proposed by Prince & Smolensky 1993:16) will determine, through a process of harmonic evaluation, which segments constitute the best candidate for rescuing the empty mora.

(24) HNUC: A higher sonority nucleus is more harmonic than one of lower sonority.

In general, vowel elements will be preferred over any consonantal elements, as they are the most sonorous segments and will most likely represent an overall increase in the sonority of the nucleus. In the constraint tableau, the candidate that best satisfies HNUC is the output \([\{\text{ox}:\text{y}\}]\), (as opposed to \([\{\text{ox}y\}]\)), as it constitutes the most harmonic nucleus. Another possible candidate, \([\{\text{ox}y\}]\), is ruled out because it violates the FT-BIN constraint.

\[
\begin{array}{|c|c|c|}
\hline
\text{HNUC} & \text{FT-BIN} & \text{HNUC} \\
\hline
\text{a. } [\{\text{ox}y\}] & \checkmark & \checkmark \\
\text{b. } [\{\text{ox}y\}] & \checkmark & \checkmark \\
\text{c. } [\{\text{ox}y\}] & \checkmark & \checkmark \\
\hline
\end{array}
\]

Finally, one of the basic constraints from the faithfulness family, Fill., will play a crucial role in selecting the optimal output candidate for forms such as \(/myf/\). PARSE and Fill are both representatives of the set of constraints demanding a tight relation between input and output. Both principles ensure that the initial input structure will be fully parsed and filled. The Fill constraint expresses the idea that every node in the input structure must be filled properly (Prince & Smolensky 1993:250). We will interpret this constraint in a general way so that it is able to ban any situation in which the input structure is either unfilled or overfilled.

(26) Fill: Syllable positions are filled with segmental material

Tableau (27) evaluates three possible candidates for the underlying form \(/myf/\). The candidate \([\{my:y\}]\) crucially violates Fill., as the segment \([y:y]\) is adding segmental and prosodic material in the output that is not present in the input structure. Instead, the winning candidate, \([my:f]\), does not add any unnecessary material to the structure.

\[
\begin{array}{|c|c|c|}
\hline
\text{HNUC} & \text{FT-BIN} & \text{HNUC} \\
\hline
\text{a. } [\{my:y\}] & \checkmark & \checkmark \\
\text{b. } [\{my:y\}] & \checkmark & \checkmark \\
\text{c. } [\{my:y\}] & \checkmark & \checkmark \\
\hline
\end{array}
\]

Similarly, word-final vowels in oystones do not lengthen (cf. \(/\text{vesti}/[\text{ves}''\text{t}\text{i}]\) ‘to dress’) because, unlike vowels before word-final voiced obstruents, no moraic unit from the following consonant is available in the input structure. This set of examples represent an argument for the relative ordering of FT-BIN and Fill, showing that Fill has to be ranked higher than FT-BIN. In this case, the winning candidate \([\text{ves}''\text{t}\text{i}]\) is chosen over \([\text{ves}''\text{t}\text{e}i]\) because the lengthening of the final long vowel represents a violation of the higher-ranked principle Fill.\footnote{We do not deal with the possible candidate \([\text{ves}''\text{t}\text{i}]\) (an output which satisfies both the FT-BIN and Fill requirements) because it would involve stress assignment constraints.}

\[
\begin{array}{|c|c|c|}
\hline
\text{HNUC} & \text{FT-BIN} & \text{HNUC} \\
\hline
\text{a. } [\{\text{ves}''\text{t}\text{e}i\}] & \checkmark & \checkmark \\
\text{b. } [\{\text{ves}''\text{t}\text{e}i\}] & \checkmark & \checkmark \\
\hline
\end{array}
\]

As we know, the output \([\text{ves}''\text{t}\text{e}i]\) ‘dress’ is also a well-formed word in Milanese. In this case (and in all cases of oystones with final long vowels) we assume that the input forms have an underlying long vowel (cf. \(/\text{ves}''\text{t}\text{e}i/\)).

In sum, we claim that the analysis presented here successfully accounts for the productive vowel length alternations in Milanese. Residual phenomena such as the set of cases where word-final /\text{n}/ or /\text{l}/ are preceded by short vowels can just be obtained through lexical marking (i.e., /\text{n}/ or /\text{l}/ will not be mora-bearing). Thus, the vowel length difference between \([\text{pət}]\) ‘bread’ and \([\text{pan}]\) ‘cloth’, both underlyingly /\text{pət}/, will come from the fact that the former has an underlying mora in the lexical representation, while the latter does not (cf. \([\text{pətæs}]\) ‘cloth.dim’ and \([\text{pætæl}]\) ‘bread.dim’ (Ch:1064)). Similarly, the unusual presence of short vowels before word-final voiced obstruents (\([\text{frend}]\) ‘cold’, \([\text{gæb}]\) ‘hunchback’, \([\text{mæz}]\) ‘hall’) will be treated in a similar way: such consonants will be specifically marked not to license a moraic unit.

4. Conclusion

This article has claimed that the productive alternation of long and short vowels in Milanese can be successfully accounted for by resorting to three basic constraints on representational well-formedness. A universal binarity constraint on
foot structure (FT-BIN) and two other constraints: HNucc (the tendency for nuclei to increase their sonority level) and FitL (the demand that the input structure is respected). These three constraints, which have been shown to be active in different languages, are the key factors in deciding the optimal outputs and in successfully predicting vowel length distribution in this dialect.

In contrast with previous proposals based on a process of Bimoraic Enforcement (Monteull 1990), I believe that the present analysis has the advantage of accounting for the vowel length distribution in a way that is crosslinguistically motivated. The analysis offers a principled motivation for the fact that vowels are only lengthened in final syllables. In particular, the FT-BIN constraint explains why vowels are lengthened in this context and stay short when in penultimate or antepenultimate positions. The difference between the behavior of vowels in penultimate vs. word-final syllable positions has been reported in other Northern Italian dialects (Prietu 1994). For example, in the Lombard dialect spoken in Valle Spluga stressed vowels are long before word-final /r/ plus consonant clusters (cf. [tɔr∅] ‘twisted.ms’, [kɔr∅] ‘body’, [tɔr∅] ‘late’, [in’ve:m] ‘winter’) and stay short in penultimate syllables (cf. [ˈporta] ‘door’, [ˈbarba] ‘beard’, [ˈkwerta] ‘covered.fs’; data are taken from Zahn 1989).


In the cases above, the foot binarity constraint, FT-BIN, is ranked higher than the syllable binarity constraint (i.e., lengthen every stressed syllable), that is, optimization at the foot level has priority over the optimization at the syllable level. Optimization at one level in some cases applies at the expense of another level: the evolution of French syllable structure, for example, represents an instance of syllable structure becoming more complex due to the pressure to optimize different foot types (Jacobs 1992). In the case of Milanese we have also witnessed the competition and interplay between two different optimization requirements: on the one hand, the pressure to optimize foot structure (FT-BIN) and, on the other, the pressure to optimize the prosodic representation of segments, as more sonorous segments tend to increase their prosodic weight.

REFERENCES


