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THE MORPHOLOGY OF ROMANIAN PALATALIZATION

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Abstract: In this paper, I will argue that the asyllabic /i/—a recurrent inflectional element in final position in Romanian words—is not a phoneme of the Romanian vowel system. I will present arguments which sustain that the morphological marker *-i* leads to the palatalization of the preceding consonant, resulting in a positional allophone of the consonant phoneme in complementary distribution with it.

Keywords: Romanian, palatalization, palatalized consonants, affixation, morphology

1. Background information

1.1. The Romanian phonemic system

1.1.1. The vowels

The Romanian vowel system is quite controversial. For didactic purposes a vowel phoneme inventory of seven vowels has been commonly accepted. The common representation of the Romanian vowel phonemes is given below in Table 1.

According to the UCLA UPSID database (cf. Maddieson 1984), there are 70 languages that contain the central mid vowel /ə/ and only 32 that contain the central high vowel /ɨ/, while both vowels occur in only twelve languages. Unlike the English schwa, the Romanian central mid vowel /ə/ is not a reduced vowel, as it "surfaces under stress and participates in metaphonic alternations along with the other mid vowels, /e/ and /o/" (Chiţoran 2002 : 8).

	Front	Central	Back
High	i	î/ɨ	u
Mid	e	ă/ə	o
Low		a	

Table 1: The Romanian vowels

1.1.2. The glides and the diphthongs

Romanian has a wide range of diphthongs and even triphthongs, but only few of them can be considered monophonematic. Only /ea/ and /oa/ can be included in the phonemic inventory, as they alternate with short vowels and are not subject to resyllabification. Various solutions have been proposed for the problem of Romanian diphthongs, see Chiţoran (2002: 201–252) for a detailed discussion.

(1) *teamă* teamə/ 'fear'
aseară /asearə/ 'last night'
oaie /oaje/ 'sheep'
soare /soare/ ext'sun'
noapte /noapte/ 'night'

The glides /j/ and /w/ are also subject to different interpretations, as it has not yet been proved whether they are themselves underlying or derived from underlying vowels.

(2) *iarnă* /jarnə/ 'winter'
abia /abja/ 'hardly'
poluare /polware/ 'pollution'

1.1.3. The consonants

The commonly accepted consonant phoneme inventory is presented in Table 2.[1]

[1] Adopted from Chiţoran (2002:10), with the only difference that the term *palatal* was changed to *prepalatal*. Spinu (2006) uses the term *post-alveolar*.

	labial	dental	prepalatal	velar	glottal
plosives	p, b	t, d	ʧ, ʤ	k, g	
		ʦ			
fricatives	f, v	s, z	ʃ, ʒ		h
nasals	m	n			
approximants		l			
		r			

Table 2: The Romanian consonant phonemes

1.2. Previous approaches

There have been many proposals for a Romanian phonemic system over the years. All linguists more or less concerned with the phonology of Romanian have tried to determine the phonemic inventory of the language, thus necessarily touching the issue of the asyllabic /i/. The task proved to be more complicated as the linguistic data could not always give clear information, leaving much room to subjective interpretation. Even the commutation test performed on selected minimal pairs proved to be unsatisfactory when trying to determine the exact number of the phonemes of the language. In this section, I will give a short description of the previous approaches of the problem.

1.2.1. The first proposal for a phonemic system of the Romanian language that I have knowledge about was formulated by Rosetti and Graur (1938). They distinguished seven vowel phonemes: /a, e, i, o, u, ə, ɨ/, two diphthongs: /ea/ and /oa/, two semivowels: /i̯/ and /u̯/, and 37 consonant phonemes, divided into two main groups: strong (neutral) and weak (palatalized). Each strong consonant phoneme has a weak counterpart, except for /s/, which is strong and for /k'/ and /g'/, which are weak. In the opinion of the authors, the so-called "weak" consonants are restricted to word-final position, and have a distinguishing role between the singular and plural forms of some nouns and adjectives, and between the 1st and 2nd person of the present indicative and subjunctive of the verbs.

1.2.2. Petrovici (1950) denies the existence of diphthongs and triphthongs in Romanian[2] and proposes a very complicated consonantal phonemic system comprising four categories:

[2] The terms used by Petrovici are: *pseudo-diphthongs* and *pseudo-triphthongs,* and *pseudo-final* /i/.

(3) a. **neutral consonants:** p, b, m, f, v, t, d, n, s, z, ʦ, ʃ, ʒ, l, r, k, g, x

b. **palatalized consonants:**
pʲ, bʲ, mʲ, fʲ, vʲ, tʲ, dʲ, nʲ, sʲ, zʲ, ʦʲ, ʃʲ, ʒʲ, lʲ, rʲ, kʲ, gʲ, hʲ, ʧʲ, ʤʲ, j

c. **labialized consonants:**
pʷ, bʷ, mʷ, fʷ, vʷ, tʷ, dʷ, nʷ, sʷ, zʷ, ʦʷ, ʃʷ, ʒʷ, lʷ, rʷ, kʷ, gʷ, w

d. **labio-palatalized consonants:**
pʲʷ, bʲʷ, mʲʷ, fʲʷ, vʲʷ, tʲʷ, nʲʷ, lʲʷ, rʲʷ, kʲʷ, gʲʷ, ʧʲʷ, ʤʲʷ, jʲʷ

The system proposed by Petrovici proves to be too elaborate and is against the economy principle that should govern language description. On the other hand, Petrovici does not explain why some series lack one or more elements (/ʧʷ/, for instance) although there are linguistic data that would support them. Some of Petrovici's minimal pairs are listed below:

(4)

/p/–/pʷ/	*poată* 'that he can' – *pată* 'stain'
/r/–/rʷ/	*roată* 'wheel' – *rată* 'rate'
/d/–/dʷ/	*doar* 'only' – *dar* 'gift'
/s/–/sʷ/	*soare* 'sun' – *sare* 'salt'
/m/–/mʷ/–/mʲʷ/	*mare* 'big' – *moare* 'he dies' – *lăcrămioare* 'lily of the valley'
/k/–/kʷ/–/kʲʷ/	*car* 'wagon' – *chiar* 'even' – *chioară* 'one-eyed'

Petrovici excludes from this system the diphthongs /ea/ and /oa/. He considers them positional allophones of the vowel /a/ that appear after a palatalized and a labialized consonant, respectively. The predictability of Romanian palatalization is a strong argument against this complicated consonant phonemic system. The number of the vowel phonemes is also reduced to five: /ə/ and /ɨ/ are seen as allophones of /e/ and /i/ respectively.

1.2.3. The phonemic system proposed by Avram (1956) comprises 22 consonant phonemes, seven vowel phonemes and two glides /i̯/ and /o̯/, for which he gives the following minimal pairs, where /i̯/ and /o̯/ can be commuted with /r/ thus being distinct phonemes. Avram does not see the Romanian consonant phonemes as having a palatal, labial or labio-palatal vocalic timbre.:

(5) *iele* /i̯ele/ 'ideas' – *rele* /rele/ 'bad.fem.sg'
oare /o̯are/ 'is it?' – *rare* /rare/ 'rare.fem.sg'

1.2.4. Avram's phonemic system was adopted by Pătruţ (1972), who includes the two glides in the category of consonants, admits the existence of

two monophonematic diphthongs /ea/ and /oa/, but mentions two "short phonemes" about which he gives no specific information.

1.2.5. One of the most recent approaches to Romanian phonology has been put forth by Chiţoran (2002) in an Optimality Theoretic framework. Chiţoran (2002:11) writes, "[...] word-final consonants are palatalized in the presence of a front vowel morphological marker, for example the desyllabified inflectional marker ⟨i⟩. In nouns and adjectives ⟨i⟩ is a plural marker":

(6) 'army' /oaste/ /oʃtʲ/ 'armies'
'wasp' /vjespe/ /vjespʲ/ 'wasps'

"In verbs, the second person singular marker has the same phonetic realization" (*ibid.*):

(7) 'I yawn' /kask/ /kaʃtʲ/ 'you yawn'
'I see' /vəd/ /vezʲ/ 'you see'

Chiţoran concludes that the underlying /i/ in affixes surfaces as a glide /j/ after vowels, as a full vowel after consonant clusters and as palatalization after consonants.

(8) V+/i/ /daw/ 'I give' /daj/ 'you give'

(9) CC+/i/ /albástru/ 'blue' /albáʃtri/ 'blue.pl'
/úmblu/ 'I walk' /úmbli/ 'you walk'

(10) C+/i/ /lukréz/ 'I work' /lukrezʲ/ 'you work'
/flo̯áre/ 'flower' /florʲ/ 'flowers'

1.2.6. In his Ph.D. dissertation on phonological markedness, Iscrulescu (2006) argues for vowel-final underlying representations in both singular and plural forms, and shows that "there is an asymmetry between Singulars and Plurals in that only Plurals allow for consonants with secondary articulation, which occur as a result of number affixation, while Singulars allow only for plain consonants and in fact often have a null realization of the Number suffix":

(11) a. No secondary articulation in the Singular:
/lup-u/$_{sg}$ → [lup-∅] 'wolf' (*[lupu]$_{sg}$, *[lup^{w}]$_{sg}$)
b. Secondary articulation in the Plural:
/lup-i/$_{pl}$ → [lupj]$_{pl}$ 'wolves' (*[lup-∅]$_{pl}$, *[lupi]$_{pl}$)

Iscrulescu argues for palatalized consonants that are limited to word-final position, a stance which I will also follow in this paper.

2. Lexical and morphological instantiations

2.1. In Romanian, there are three grammatial genders: feminine, masculine and neuter. As neuter patterns with masculine in the singular and with feminine in the plural, the inflectional paradigm is quite rich. Some of the masculine nouns and adjectives form the plural by adding the affix *-i* to the singular form:

(12) *pom* /pom/ 'tree' – *pomi* pom^{j} 'trees'
lup /lup/ 'wolf' – *lupi* /lup^{j}/ 'wolves'
soț /sots/ 'husband' – *soți* /sots^{j}/ 'husbands'
munte /múnte/ 'mountain' – *munți* /munts^{j}/ 'mountains'
bun /bun/ 'good.m.sg' – *buni* /bun^{j}/ 'good.m.pl'
liber /líber/ 'free.m.sg' – *liberi* /líber^{j}/ 'free.m.pl'

2.2. On the other hand, Romanian is rich in minimal pairs that contrast plural nouns with the zero article and nouns with the definite article:

(13) *pom* /pom/ 'tree' – *pomi* /pom^{j}/ 'trees' – *pomii* /pomi/ 'the trees'

(14) *lup* /lup/ 'wolf' – *lupi* /lup^{j}/ 'wolves' – *lupii* /lupi/ 'the wolves'

2.3. The affix *-i* also distinguishes between the 1st and 2nd person of the indicative or subjunctive present of verbs:

(15) *eu citesc* 'I read' – *tu citești* /ʧitéʃt^{j}/ 'you read'
eu (mă) plimb 'I walk' – *tu (te) plimbi* /plimb^{j}/ 'you walk'

eu întreb 'I ask' – *tu întrebi* /ɨntrébʲ/ 'you ask'
eu lucrez 'I work' – *tu lucrezi* /lukrézʲ/ 'you work'

2.4. It also occurs in the verbal auxiliaries (16)–(17)and at the end of some pronominal forms (18):

(16) *aţi* /atsʲ/ 'you would.pl'

(17) *veţi* /vetsʲ/, *oţi* /otsʲ/ 'you will.pl'

(18) *îmi* /ɨmʲ/ 'to me', *îşi* /ɨʃʲ/ 'to him', *îţi* /ɨtsʲ/ 'to you'

2.5. The same sound (a very short, asyllabic [i̯]) appears at the end of some other words, but has no connection with the affix mentioned above. The analysis that I propose does not refer to these words, as in this case some specific historically attested analysis can give proper explanation. This is not the issue of the present paper.

(19) *azi* /azʲ/ 'today'
nimeni /nimenʲ/ 'nobody'
ieri /jerʲ/ 'yesterday'
ori /orʲ/ 'or'

3. Historical data

Historically, palatalization in Romanian occurs before front vowels /i/ and /e/. Romanian is a Romance language; about 75 to 80% of its vocabulary can be (directly or via French or Italian, or both) traced back to Latin. The history of the language attests palatalization in front of Yod. Latin Yod-types affecting Romanian consonants are displayed in Table 3. As Yod 1, Yod 2, Yod 3 and Yod 4a have the same effect on the preceding consonant, I named them generically "Yod α". Yod 4b, for reasons of better understanding, will be named "Yod β". Instances of Romanian historical palatalization can be found in Table 4.

Yod 1	Yod α	short *ĕ*
Yod 2		long *ī*
Yod 3		affix *-i*
Yod 4a		*i̯* semivowel (< *e/i* + vowel, in hiatus, posttonic)
Yod 4b	Yod β	*i̯* semivowel (< *e/i* + vowel, in hiatus, protonic)

Table 3: Latin Yod

t + Yod α > *ţ*	*subtīlis* > *subţire* 'thin'	*t* + Yod β > *ĉ*	*titiónem* > *tăciune* 'live coal'
d + Yod α > *dz* > *z*	*audis* > *auzi* 'you hear'	*d* + Yod β > *ĝ* > *ẑ*	*adiúto* > *ajut* 'I help'
l + Yod α > *l'* > *i̯*	*leporem* > *iepure* 'hare'		
s + Yod α > *ş*	*ursi* >*urşi* 'bear.pl'		
c + Yod α > *ţ*	*mistrícium*>*mistreţ* 'wild boar'	*c* +Yod β > *ĉ*	*mustacióla* > *mustăcioară* 'moustache.dim'
g + Yod α > *dz* > *z*	*axúngia* > *osînză* 'lard'	*g* + Yod β > *ĝ* > *ẑ*	*gyrus* > (**giúrus*) > *ĝuru* > *ẑur* 'around'

Table 4: Historical palatalization in Romanian

On the other hand, velars are also affected by the front mid and high vowels /e/ and /i/, being changed to prepalatal affricates. Remember that /ʧ/ and /ʤ/ have a post-alveolar or prepalatal point of articulation in Romanian:

c + *e, i* > *ĉ*	*vicinus* > *vecin* 'neighbour'
g + *e, i* > *ĝ*	*legem* > *lege* 'law'

Table 5: Palatalization of velars in Romanian

4. Arguments and analysis

4.1. Romanian data show that the affix *-i* surfaces as a full vowel when preceded by a consonant cluster with rising sonority. Romanian allows complex codas but never violates the Sonority Sequencing Principle (SSP), which bans complex codas rising in sonority. The affix thus surfaces as a full vowel—the nucleus of a following syllable—since Romanian does allow complex onsets with rising sonority.

(20) *socru* /sókru/ 'father in law' *socri* /sókri/ 'father in law.pl'
albastru /albástru/ 'blue' *albaștri* /albáʃtri/ 'blue.pl'
umblu /úmblu/ 'I walk' *umbli* /úmbli/ 'you walk'

The same happens in the singular, where underlying /u/ surfaces as [u] in nouns and adjectives whose stem ends in a voiceless consonant plus a liquid, a consonant cluster that violates the SSP. For detailed discussion, see Iscrulescu (2006)

4.2. When the affix *-i* is added to a word ending in a licit coda, be it simple or complex, then it surfaces as a secondary place of articulation of the last consonant. Syllable codas of C type are allowed in Romanian. Affixation adduces a secondary place of articulation to the C resulting in a palatalized consonant in complementary distribution with the plain one.

(21) *pom* /pom/ 'tree' *pomi* /pom^{j}/ 'trees'
lup /lup/ 'wolf' *lupi* /lup^{j}/ 'wolves'

The two consonants tend to be positional allophones of the same phoneme rather than different phonemes, as the palatalized variant is strictly limited to word final position; no other occurrence of word internal C+*i* either in onsets or in syllable codas results in a palatalized consonant.

4.3. It has been suggested treating the palatalized consonants as two-segment sequences (C+*j*) since Romanian attests minimal pairs such as *lupi* /lup^{j}/ 'wolves' – *lupt* /lupt/ 'I fight'. Several arguments can be brought against this interpretation.

4.3.1. First, the number of this kind of minimal pairs is nevertheless irrelevant in comparison with the number of those where the asyllabic [i̯] alternates with the syllabic [i].

4.3.2. A second argument that stands against this interpretation is supported by morphophonology, and is the fact that, while *lupi* is bimorphematic, consisting of *lup* + the plural desinence *-i, lupt* is also bimorphematic, but with morpheme ∅ (*lupt* + ∅).

4.3.3. And yet a third argument against considering the palatalized consonant as a two-segment sequence is given by phonetics itself, and is that the [ʲ] sound does not occur in any other environment than that of a word final consonant. Although Romanian attests instances of C+*j* word-initially (cf. *biată* /bjátə/ 'poor'; *piatră* /pjátrə/ 'stone') the sound [j] is totally different from the word-final [ʲ], and it corresponds to a palatal fricative obstruent having the feature [±voiced] according to the consonantal environment in which it appears.

4.4. Affixation after licit codas of (C)CC type is somewhat different.

4.4.1. As mentioned above, the SSP does not allow stop+liquid (*muta cum liquida*) clusters in syllable codas—be they preceded by nasals or fricatives or not—as stops are less sonorous than liquids and sonority must be decreasing in codas. For this reason resyllabification is preferred to palatalization. Stop+liquid consonant clusters are permitted in syllable onsets. And as each syllable must have a nucleus, the affix surfaces as a full vowel. If the order of the consonants in a cluster is reversed, then palatalization is possible. Nasals+stops and liquids+stops are permitted in codas.

(22) *alb* /alb/ 'white.masc.sg' — *albi* /albʲ/ 'white.masc.pl.'
mă plimb /mə plimb/ 'I walk' — *te plimbi* /te plimbʲ/ 'you walk'
intéligent /inteliʤent/ 'clever.masc.sg' — *inteligenți* /intéliʤentsʲ/ 'clever.masc.pl.'

4.4.2. When final consonants are affected by the historical Yod 3 there can be found instances of historical palatalization as shown in Table 4. (cf. *urs – urși*).

4.5. On the other hand, secondary palatalization affects all consonants except for /s/ and /d/. In a perceptual study Spinu (2006) measured the sensitivity of Romanian speakers to plain vs. palatalized consonants, and notes that the identification rate of the latter group is significant, though a little lower that that of their plain counterparts. Furthermore, the results of the experiment show a higher sensitivity of the native speakers for consonants whose point of articulation is bilabial as compared to consonants with a dental or post-alveolar point of articulation.

4.6. Affixation after vowels. Vowels are syllable nuclei. The possibilities of the affix *-i* given by the nuclear nature of preceding vowels are thus limited: (a) it can surface as a glide following the nucleus vowel or (b) it can form the nucleus of another syllable. Romanian is a language that avoids hiatus (see Chiţoran 2002:95–126 for a detailed analysis of hiatus resolution). As a rule, affixes are unaccented in Romanian and an unaccented vowel is not subject to syllabification. The only possibility remains to surface as a glide following a vowel, but not being part of the nucleus.

(23) *dau* /daw/ 'I give' *dai* /daj/ 'you give'
vreau /vreaw/ 'I want' *vrei* /vrej/ 'you want'
bou /bow/ 'ox' *boi* /boj/ 'oxen'

As can be seen in (23), not only the second person marker surfaces as a glide, but also the first person desinence. The second person marker does not follow the singular desinence, but replaces it. Just as in case of masculine nouns and adjectives, where the plural marker replaces the singular desinence.

The vowel sequences that result are not phonemic units. It is not the case of phonological diphthongs, like the English ones, for instance, but a mere adjoining of a palatal glide to a vowel. There has been adduced much evidence to support the phonetic character of such diphthongs, the most convincing being the resyllabification of the glide in a syllable onset when adding the definite article:

(24) *bou* /bow/ 'ox' *boi* /boj/ 'oxen' *boii* /bo.ji/ 'the oxen'

4.7. Having taken into consideration all these we can commit ourselves on assuming that palatalization in Romanian is predictable. It is either historically originated or morphologically conditioned. Underlying /i/ surfaces so as not to violate the SSP, which is undominated in Romanian.

4.8. Under these circumstances, we can say that that the asyllabic /i/ is not a phoneme of the Romanian phonemic system. The final consonant of the stem undergoes the process of palatalization, but the resulting palatalized consonants are not to be considered phonemes, either.

4.9. However, there are cases when palatalization affects the penultimate or ante-penultimate consonant, this being the issue for further research, along with the process of palatalization of velar consonants, which takes

place in some masculine and neuter adjectives and nouns, where the singular and plural forms are identical.

(25) *ochi* /ok^{j}/ 'eye' *ochi* /ok^{j}/ 'eyes'
vechi /vek^{j}/ 'old' *vechi* /vek^{j}/ 'old.pl'

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To conclude, the aim of this study has been to give an account of some sound changes that occur as a result of affixation and to argue against including the generically assumed asyllabic /i/ in the phonemic inventory of the Romanian language.

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