

It is all downhill from here: the role of Syllable Contact in Romance languages*

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1. Introduction

It is a well-known fact that there is a cross-linguistic preference to avoid coda-onset clusters with an increasing degree of sonority, a tendency referred to as the Syllable Contact Law after the work by Murray & Vennemann (1983) and Vennemann (1988). The activity of this law has been adduced to explain some diachronic changes (Hooper 1976, Murray & Vennemann 1983, Vennemann 1988, Ham 1998, Holt 2004, among others), but also synchronic phenomena, such as epenthesis and epenthesis positioning (Rose 2000, Gouskova 2001), consonant strengthening (Shin 1997, Davis 1998, Davis & Shin 1999, Gouskova 2002, 2004), syncope blocking (Urbanczyk 1996, Miglio 1998, Gouskova 2002), word order and subtraction regulation in blend formation (Bat-El 1996), allomorph selection (Hargus 1996, in press), metathesis (Gouskova 2001), or regressive manner assimilation (Shin 1997, Davis & Shin 1999, Pons 2003b, 2004a).

2. Goal

The main purpose of this paper is to explore, on the basis of a quite extensive set of processes drawn from Romance languages, the nature and the effects of the SYLLABLE CONTACT constraint in Optimality Theory. In order to achieve that, we investigate and formalize 1) the process of regressive manner assimilation that applies in some varieties of Catalan as well as in Lenguadocian Occitan, 2) the process of onset strengthening and epenthesis that occur in Catalan, 3) the process of *s* rhotacism that is found in Majorcan Catalan, in some dialects of Sardinian and in some dialects of Galician, among other Romance languages, 4) the process of *s* gliding that arises in Lenguadocian Occitan, and, finally, 5) the selection between epenthesis and deletion in word-initial consonantal clusters violating the minimum sonority distance constraints in Catalan.

The analysis of these processes, most of them not considered in the literature devoted to Syllable Contact, leads to some important theoretical implications: *a*) Syllable Contact can not be regarded as a single constraint which categorically bans coda-onset clusters with rising sonority, but it must be decomposed into a universal hierarchy of constraints targeting all possible sonority distances between adjacent heterosyllabic segments, as originally suggested by Murray & Vennemann (1983), formalized in OT terms by Bat-El (1996) and Gouskova (2001, 2002, 2004), and applied to Romance languages for the first time in Pons (2003b, 2004b, 2005); *b*) the sonority scale in Catalan should distinguish flaps and trills, the latter being less sonorous, as previously proposed for Catalan and other Romance languages in Bonet & Mascaró (1997), Parker (2002), Pons (2004a, 2005); *c*) the sonority scale of Catalan should treat separately voiced and voiceless stops, the latter being less sonorous, as traditionally put forward in some studies devoted to syllable structure (see, for instance, Steriade 1982, for Attic Greek; Davis 1990, for Italian; and Blevins 1995).

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This talk is organized as follows. In section 3 the data under analysis are outlined. In section 4, the motivations that justify the application of these phenomena are discussed; this section briefly overviews previous studies devoted to Syllable Contact in Optimality Theory, and introduces a case of syllabically-driven prefix allomorphy in Catalan and a case of stem allomorphy in Majorcan Catalan put forward in Grimalt (in prep.), also in terms of Syllable Contact, which further enhance the hypothesis defended in the present paper. Section 5, devoted to the concluding remarks, explores other possible motivations for the processes based on perceptual optimization in line with work by Hume (1998, 2000) and Steriade (2004).

3. Data

3.1. Regressive manner assimilation in Majorcan and Minorcan Catalan¹

(1)

a. Stop + non-sibilant consonant (RMA [RPA])

cap fet /kap##fet/ [kaf.fét] ‘any fact’

cap mos /kap##mɔs/ [kam.mós] ‘any bite’

cap llit /kap##lit/ [ka.ɫít] ‘any bed’

cap riu /kap##riw/ [kar.ríw] ‘any river’

cap iot /kap##jot/ [kaj.jót] ‘any yacht’

b. Stop + sibilant consonant (RPA)

cap so /kap##sɔn/ [kat.tsó]~[kaf.tsó] ‘any sound’

cap joc /kap##ʒɔg/ [kad.ʒɔk]~[kad.ʒɔk] ‘any game’

(Cf. *cap* /kap/ [káp] ‘any’; *cap hora* /kap##ɔrə/ [ka.pɔ.rə] ‘any hour’)

c. Stop + non-sibilant consonant (prefixed and compound forms)

capficar /kap##fikar/ [kaf.fiká] ‘to get worried’

admirar /əd##mirar/ [əm.mi.rá] ‘to admire’

d. Stop + heterorganic stop [RPA]

pot caure /pɔd##kawr/ [pɔk.káw.rə] ‘(he/she) can fall down’

cap tros /kap##trɔs/ [kat.trós] ‘any piece’

(2)

a. Alveolar fricative + lateral, rhotic, glide (RMA [RPA])

dos llits /doz##litz/ [do.ɫíts] ‘two beds’

dos rius /doz##riwz/ [dor.ríws] ‘two rivers’

dos iots /doz##jɔtz/ [doj.jóts] ‘two yachts’

¹ The data of Majorcan Catalan have been extracted from Recasens ([1991] 1996), Dols (1993) and have been contrasted with personal inquiries in Pons (2004a). The data of Minorcan Catalan are entirely from Pons (2004a). A sample of the data of Majorcan and Minorcan Catalan can be found in the websites <http://personal.uma.com/claudiapons> and <http://seneca.uab.es/claudiapons>.

b. Alveolar fricative + sibilant [RMD]

dos sons /doz##sɔnz/ [dot.ʦsɔns]~[dot.ʦsɔns] ‘two sounds’

dos jocs /doz##ʒɔgz/ [dod.ʤsɔs]~[dot.ʦsɔns] ‘two games’

c. Alveolar fricative + stop, non-sibilant fricative, nasal² [MP]

dos peus /doz##pɛwz/ [dos.péws] ‘two feet’

dos fils /doz##filz/ [dos.fils] ‘two threads’

dos nius /doz##niwz/ [doz.níws] ‘two nests’

(Cf. *dos* /doz/ [dós] ‘two’; *dos anys* /doz##ɔnz/ [do.zájns] ‘two hours’)

d. Alveolar + consonant (prefixed forms and compounds)

desraó /dɛs##rɛɔn/ [dɛr.rɛó] ‘unreasonableness’

dessalar /dɛs##salar/ [dɛt.ʦɛlál] ‘to desalt’

desmitificar /dɛs##mitifikar/ [dɛz.mi.ti.fi.ká] ‘to demystify’

descosir /dɛs##kuzir/ [dɛs.ku.zí] ‘to unstitch’

(Cf. *desanimar* /dɛs##animar/ [dɛzɛnimá] ‘to discourage’)

(3)

a. Nasal + lateral, glide [RMA]

un llum /un#lum/ [u.ɫ.lúm] ‘one light’³

un iot /un#jɔt/ [uj.jót] ‘one yacht’

b. Nasal + stop, fricative, rhotic [MP]

un peu /un#pɛw/ [um.péw] ‘one foot’

un foc /un#fɔg/ [um.fók] ‘one fire’

un riu /un#riw/ [un.ríw] ‘one river’

(Cf. *un* /un/ [un] ‘one’; *un animal* /un#ənimál/ [ù.nə.ni.mál] ‘an animal’)

c. Nasal + consonant (prefixed forms and compounds)

enlairar /ɛn##lajrar/ [ɛl.laj.rá] ‘to take off’

empedrar /ɛn##pedrar/ [ɛm.pə.ðrá] ‘to cobble’

enrajolar /ɛn##rɛdʒɔlar/ [ɛn.rɛdʒu.lá] ‘to tile’

(4) Lateral, rhotic, glide + consonant [MP]

vol dinar /vɔl##dinar/ [vɔ̃.di.ná] ‘(he/she) wants to have lunch’

vol iogurts /vɔl##jɔyurtz/ [vɔ̃.jo.yúrs] ‘(he/she) wants yogurts’

bar petit /bar##pətit/ [bár.pə.tít] ‘small bar’

corr iardes /kor##jardɛz/ [kor.jár.ðəs] ‘(I) run yards’

² The *s* can undergo an optional process of rhotacism when followed by a nasal, a voiced obstruent and, more sporadically, before a labiodental fricative (see § 3.4).

³ Recasens ([1991] 1996: 258) reports for these sequences a nasalized realization of the lateral resulting from the process of regressive manner assimilation.

mai pot /maj##pɔd/ [maj.pót] ‘(he/she) never can’

3.2. Regressive manner assimilation in Lengüadocian Occitan⁴

(5) Stop + sonorant [RMA]

a.

ròc mòl /rɔk##mɔl/ [rɔm.mól] ‘soft rock’ (cf. *ròc* [rɔk] ‘rock’)

tot l’argent /tut##arɔzent/ [tùllarɔzén] ‘all the silver’ (cf. *tot* [tút] ‘all’)

estat normal /estat##nurmal/ [es.tàn.nur.mál] ‘regular state’ (cf. *estat* [estát] ‘state’)

dètz minutas /dets##minytoz/ [dèm.mi.ný.tos] ‘ten minutes’ (cf. *dètz* [dét] ‘ten’)

mièg nud /mjɛdʒ##nyt/ [mjɛn.nýt] ‘half naked’ (cf. *mièg* [mjét] ‘half’)

b. C[obstruent] C[obstruent] + sonorant

clesc mòl /klesk##mɔl/ [klem.mól] ‘soft head’ (cf. *clesc* [klésk] ‘head’)

taps longs /tapz##lɔnz/ [tal.lúns] ‘long stoppers’ (cf. *tap* [táp] ‘stopper’)

c. Morpheme internal

amètra /ametlo~/ametllo/ [a.mél.lo] ‘almond’

enigma /enigmo~/enimmo/ [e.ním.mo] ‘enigma’

tecnica /tekniko~/tenniko/ [ten.ní.ko] ‘technique’

signe /signo~/sinno/ [sín.no] ‘sign’

(6) Stop + sibilant consonant [RPA]

jòc sabent /dʒɔg##sabent/ [(d)ʒɔt.ʦa.βén]~[(d)ʒɔt.ʦa.βén] ‘educated game’

avèts jogat /abetz##ʒogad/ [a.βèd.ɔʒu.γát]~[a.βèd.ɔʒu.γát] ‘(you) have played’

ròcs sombres /rɔkz##sumbrz/ [rɔt.ʦú.m.bres]~[rɔt.ʦú.m.bres] ‘dark rocks’

naps gelats /napz##dʒɛlads/ [nàd.ɔʒe.láts]~[nàd.ɔʒe.láts] ‘iced turnips’

3.3 Regressive manner assimilation in Central Catalan and Eivissan Catalan⁵

(8)

a. Stop + homorganic nasal, lateral [RMA]

cap mos /kap##mɔs/ [kam.mós] ‘any bite’

pot limitar /pɔd##limitar/ [pɔl.li.mi.tá] ‘(he/she) can limit’

pot nedar /pɔd##nedar/ [pɔn.nə.ðá] ‘(he/she) can swim’

⁴ The data from Occitan has been extracted from Teulat (1972), Alibèrt (1976), Wheeler (1988), Balaguer & Pojada (2005), and has been contrasted with Patrick Sauzet, Aitor Carrera and Anna Pineda.

⁵ These data have been commonly described in the general studies devoted to Catalan phonology. See, for instance, Recasens ([1991] 1996) and Bonet & Lloret (1998).

b. Dental stop + labial nasal [RMA (RPA)]

pot mirar /pɔd##mirar/ [pðm.mi.rá] ‘(he/she) can look’

(9) Stop + heterorganic nasal, lateral (formal style) [MP]

cap nas /kap##nas/ [kab.nás] ‘any nose’

cap limit /kap##limit/ [kab.lí.mit] ‘any limit’

(10) Stop + heterorganic nasal (colloquial style) [RMA]

cap nas /kap##nas/ [kam.nás] ‘any nose’

puc nedar /pug##nedar/ [puŋ.nə.ðá] ‘(he/she) can swim’

(11) Fricative, lateral, rhotic, glide + consonant [MP]

puf negre /puf##negr/ [puv.né.ɣrə] ‘black pouffe’

dos músics /doz##muzikz/ [doz.mú.ziks] ‘two musicians’

dos llits /doz##lítz/ [doz.lítz] ‘two beds’

vol riure /bɔl##riwr/ [bɔl.ríw.rə] ‘(he/she) can laugh’

cor iònic /kɔr##jɔnik/ [kɔr.jɔ.nik] ‘ionic heart’

mai riu /maj##riw/ [maj.ríw] ‘(he/she) never laughs’

pot limitar /pɔd##limitar/ [pðl.li.mi.tá] ‘(he/she) can limit’

pot nedar /pɔd##nedar/ [pðn.nə.ðá] ‘(he/she) can swim’

Interim generalization

The emerging generalization for Majorcan and Minorcan Catalan and for Languadocian Occitan is that sonority increase across syllable boundary is leveled out by total assimilation, whereas decreasing sonority transitions are maintained. Three exceptions arise, however, to this generalization: sibilant preservation in sibilant-nasal heterosyllabic clusters, nasal preservation in nasal-rhotic heterosyllabic clusters, and liquid preservation in liquid-glide heterosyllabic clusters. In Central Catalan and Eivissan Catalan, sonority increase across syllable boundary is leveled out by total assimilation or regressive manner assimilation, provided that this does not imply the loss of the point of articulation of a non-coronal consonant or the manner of articulation of a non-stop consonant.

3.4 Rhotacism in Majorcan Catalan⁶

(11)

a. Alveolar sibilant + voiced consonant or *f* [Optional R]

dos bous /doz##bɔwz/ [dor.bɔws]~[dor.bɔws]~[dor.βɔws] ‘two oxen’

dos dits /doz##ditz/ [dor.dítz]~[dor.dítz]~[dor.ðítz] ‘two fingers’

dos gots /doz##gɔtz/ [dor.gɔts]~[dor.gɔts]~[dor.ɣɔts] ‘two glasses’

⁶ These data from Majorcan Catalan have mostly been extracted from Moll (1934), Bibiloni (1983), Dols (1993) and Recasens ([1991] 1996) and have been contrasted with personal inquiries in Pons (2004a). As far as the exact realization of the consonant, Moll and Recasens report an approximant [ɹ] and Bibiloni refers to the consonant as a relaxed [r]. Some experimental work has been carried out in order to determine the nature of this consonant (see the website: <http://personal.aura.com/claudiapons/> // <http://seneca.uab.es/claudiapons>).

dos vins /doz##vinz/ [dor.víns]~[doi.víns] ‘two wines’

dos mesos /doz##mezz/ [dor.mé.zus]~[doi.mé.zus] ‘two months’

dos nius /doz##niwz/ [dor.níws]~[doi.níws] ‘two nests’

dos focs /doz##fɔkz/ [dos.fɔks]~[dor.fɔks]~[doi.fɔks] ‘two fires’

b. Alveolar sibilant + voiceless stop [MP]

dos pans /doz##panz/ [dos.páns] ‘two breads’

dos tocs /doz##tɔkz/ [dos.tɔks] ‘two knocks’

dos cans /doz##kanz/ [dos.káns] ‘two dogs’

3.5 Rhotacism in Sardinian⁷

(12)

a. Alveolar fricative + voiced consonant or *f* (R)

tres boes /tres##boes/ [trɛr.bɔ.es]~[trɛr.bɔ.ɛ.zɛ]⁸ ‘three oxen’

tres domos /tres##domɔs/ [trɛr.dɔ.mɔs]~[trɛr.dɔ.mɔ.zɔ] ‘three houses’

tres gattos /tres##gattɔs/ [trɛr.gát.tɔs]~[trɛr.gát.tɔ.zɔ] ‘three cats’

tres manos /tres##manɔs/ [trɛr.má.nɔs]~[trɛr.má.nɔ.zɔ] ‘three hands’

tres rosas /tres##rɔsas/ [trɛr.rɔ.zas]~[trɛr.rɔ.za.za] ‘three roses’

tres yannas /tres##jannas/ [trɛr.ján.nas]~[trɛr.ján.na.za] ‘three doors’

tres ziros /tres##ziɔs/ [trɛr.ðzi.rɔs]~[trɛr.ðzi.rɔ.zɔ] ‘three turns’

tres tzeccos /tres##zekɔs/ [trɛr.ðzék.kɔs]~[trɛr.ðzék.kɔ.zɔ] ‘three blinds’

tres zentes /tres##zentɛs/ [trɛr.ðzén.tɛs]~[trɛr.ðzén.tɛ.zɛ] ‘three people’

tres fizos /tres##fizɔs/ [trɛr.fí.ðzɔs]~[trɛr.fí.ðzɔ.zɔ] ‘three sons’

b. Alveolar fricative + voiceless consonant (MP)

tres panes /tres##panɛs/ [trɛs.pá.nɛs]~[trɛs.pá.nɛ.zɛ] ‘three breads’

tres táulas /tres##tawlas/ [trɛs.táw.las]~[trɛs.táw.la.za] ‘three tables’

tres canes /tres##kanɛs/ [trɛs.ká.nɛs]~[trɛs.ká.nɛ.zɛ] ‘three dogs’

tres santos /tres##santɔs/ [trɛs.sán.tɔs]~[trɛs.sán.tɔ.zɔ] ‘three saints’

tres thithulas /tres##θiθulas/ [trɛs.θiθ.θu.las]~[trɛs.θi.θu.la.za] ‘three mosquitoes’

tres sorres /tres##sɔrɛs/ [trɛs.sór.res]~[trɛs.sór.re.zɛ] ‘three sisters’

c. Prefixed forms

disganáu /dis##ganau/ [dir.ga.ná.u] ‘lacking in appetite’

disgrássia /dis##grasja/ [dir.grás.sja] ‘bad luck’

isbentiare /is##bentjare/ [ir.ben.tjá.re] ‘to get some air’

identare /is##dentare/ [ir.den.tá.re] ‘to take the teeth’

⁷ The data from Sardo-Nuorese have been extracted from Pittau (1972: 33-34) and have been contrasted with Lucia Molinu.

⁸ According to Lucia Molinu, *r* is realized as a «monovibrant» (p.c.). The voiced stop placed in onset position can be realized as approximant: [trɛr.βɔ.ɛ.zɛ]~[trɛr.ðɔ.mɔ.zɔ]~[trɛr.ɣát.tɔ.zɔ].

addistémpus /adis##tempus/ [aɖ.djɪ.s.tém.pu.zu] ‘out of step’
dispiákere /dis##pjakere/ [dis.pja.ké.rɛ] ‘to be disdainful’
isconcare /is##kɔnkare/ [is.kɔŋ.ká.rɛ] ‘to injure’
isperare /is##perare/ [is.pɛ.rá.rɛ] ‘to wait’

3.6 Rhotacism in Galician⁹

(13)

a. Alveolar fricative + voiced consonant, non-sibilant fricative [Optional R]

estás mal /stas##mal/ [es.tar.mál] ‘you feel bad’
estás doente /stas##doente/ [es.tar.ðo.én.te] ‘you are ill’
estás facendo /stas##faθendo/ [es.tar.fá.θén.do] ‘you are doing’
dous cintos /dows##θintos/ [dowr.θin.tos] ‘two belts’

b. Alveolar fricative + voiceless consonant [MP / A]

estás parvo /stas##parbo/ [es.tas.pár.βo]~[es.tah.pár.βo] ‘you are stupid’
estás tolo /stas##tolo/ [es.tas.tó.lo]~[es.tah.tólo] ‘you are mad’

3.7 Rhotacism in other Romance languages

Alveolar fricative rhotacism is also found in other Romance languages and dialects, such as Picard, Asturian Spanish, Andalusian Spanish, South-American Spanish, etc. The contexts where the process applies are the same exposed before, that is, systematically before a voiced consonant and more sporadically before another fricative.¹⁰

Interim generalization

The emerging generalization for Majorcan Catalan, Sardinian and Galician is that a decreasing or a flat sonority value from the sibilant to the next consonant is not enough and it has to be augmented by increasing the sonority in the coda. Rising sonority transitions are also repaired via rhotacism.

3.7 Gliding in Occitan

(14)

a. Alveolar fricative + voiced consonant or *f* [G]

las filhas /laz#filoz/ [laj.fi.ɫos] ‘the daughters’
las femmas /laj##fennos/ [laj.'fɛn.nos] ‘the women’
los buòus /luz#bjɔwz/ [luj.'bjɔws] ‘the oxen’
bonis vins /bɔniz#binz/ [bɔnij.βíns] ‘good wines’

⁹ Data from Galician is due to Dubert (1999) and Frexeiro (1998) and it has been contrasted with Sabela Labraña. According to Frexeiro (1998: 161), «É frecuente en boa parte do territorio galego, especialmente na zona suroriental, o fenómeno do rotacismo, consistente na realización do /s/ implosivo como [r] en posición interior de palabra ou por fonética sintáctica ante consonante sonora, o en menor medida perante as sordas /f/ e /θ/ ou mesmo /ʃ/»

¹⁰ For a comprehensive description of rhotacism in Romance languages, see Lorenzo (1975), and for an interpretation of them within OT, see Pons (2005).

cos nud /kɔs#nyt/ [kɔj.nýt] ‘naked body’
es mòrt /es##mɔrt/ [ej.mórt] ‘(he/she) is dead’

b. Alveolar fricative + voiceless consonant [MP / A]

las claus /las#klaws/ [las.kláws]~[lah.kláws] ‘the keys’
las pòrtas /las#pɔrtas/ [las.pór.tɔs]~[lah.pór.tɔs] ‘the doors’
bonas taulas /bɔnas#tawlas/ [bɔ.nos.táw.lɔs]~[bɔ.noh.táw.lɔs] ‘good tables’

Interim generalization

The emerging generalization for Occitan is that a decreasing sonority value from the sibilant to the next consonant is not enough and it has to be augmented by increasing the sonority in the coda. Rising sonority transitions are also repaired via gliding.

3.8 Strengthening and epenthesis in Catalan

(15) *Strengthening*

a. Valencian Catalan (Jiménez 1997, 1999)

setze /sedz/ [séɖ.ɖze] ‘sixteenth’
dotze /dodz/ [dód.ɖze] ‘twelve’

b. Majorcan and Minorcan Catalan (Pons 2003a, 2004a, 2004b)

tot sol /tot##sɔl/ [tot.ʃsɔl] ‘alone’
poc sol /pɔk##sɔl/ [pɔt.ʃsɔl] ‘few sun’
dessalar /dɛs##salar/ [dɛt.ʃsə.lá] ‘to desalt’

c. Catalan (Bonet & Mascaró 1997)

honrat /onr+a+d/ [un.rát] ‘honest’
folrar /folr+a+r/ [ful.rá] ‘to cover’

d. Catalan (some varieties)¹¹

vendria /ben+riə/ [bɛn.ríə] ‘(he/she) would sell’
caldria /kal+riə/ [kəl.ríə] ‘it would be necessary’
temeria /tem+riə/ [tɛm.ríə] ‘(I) would be afraid’
temeré /tem+re/ [tɛm.ré] ‘(I) will be afraid’
planyerà /plɔŋ+ra/ [plɔŋ.rá] ‘(he/she) will complain’
planyeria /plɔŋ+riə/ [plɔŋ.ríə] ‘(he/she) would complain’

(16) *Epenthesis*¹²

vendre /ben+r/ [béŋ.drə] ‘to sell’
vendrà /ben+ra/ [bɛŋ.drá] ‘(he/she) will sell’
vendria /ben+riə/ [bɛŋ.dríə] ‘(he/she) would sell’
 (Cf. *venia* [bɛniə] ‘he/she sold’)

¹¹ These data are due to Lloret (2002).

¹² These data are due to Lloret (2002).

caldre /kal+r/ [kál̩drə] ‘to be necessary’
caldrà /kal+ra/ [kə̀drá] ‘it will be necessary’
caldria /kal+ríə/ [kə̀dríə] ‘it would be necessary’
 (Cf. *calia* [kə̀liə] ‘it was necessary’)

temeria /tem+ríə/ [tə.mə.ríə] ‘(I) would be afraid’
temeré /tem+re/ [tə.mə.ré] ‘(I) will be afraid’
 (Cf. *temia* [tə̀miə] ‘He/She was afraid’)

venceria /bens+ríə/ [bən.sə.ríə] ‘(I) would win’
venceré /bens+re/ [bən.sə.ré] ‘(I) will win’
 (Cf. *vencia* [bə̀nsiə] ‘he/she would sell’)

planyerà /plaj+ra/ [plə̀njə̀rá] ‘(he/she) will complain’
planyeria /plaj+ríə/ [plə̀njə̀ríə] ‘(he/she) would complain’
 (Cf. *planyia* [plə̀njiə] ‘he/she was afraid’)

Interim generalization

Here, sonority increase across syllable boundary is reversed through onset strengthening and avoided through epenthesis.

3.9. Strategy selection in Catalan¹³

(19)

a. Epenthesis

sputnik /sputnik/ [ə̀spúnnik] ‘sputnik’
Spiderman /spiderman/ [ə̀spíðerman] ‘Spiderman’
Spielberg /spilberg/ [ə̀spílfə̀rk] ‘Spielberg’
Springsteen /sprɪŋgstɪn/ [ə̀sprɪŋgstɪn] ‘Springsteen’

b. Preservation

plata /platə/ [plátə] ‘silver’
prou /prɔw/ [prów] ‘enough’
blau /blaw/ [bláw] ‘blue’
broma /brómə/ [brómə] ‘joke’

c. Epenthesis

eslau /slaw/ [ə̀z.láw] ‘Slav’
eslip /slip/ [ə̀z.líp] ‘slip’
slalom /slalom/ [ə̀z.lá.lom] ‘slalom’

d. Deletion

psicologia /psikuluʒiə/ [sikuluʒiə] ‘psychology’

¹³ Data are due to Bonet & Lloret (1998: 73-75).

pseudònim /psə̀wðə̀nim/ [sə̀wðə̀nim] ‘pseudonym’
pneumàtic /pnə̀wmatik/ [nə̀wmatik] ‘pneumatic’
pneumònia /pnə̀wmə̀niə/ [nə̀wmə̀niə] ‘pneumonia’
gnom /gnɔm/ [nóm] ‘gnome’
mnemotècnic /mnə̀mutə̀gnik/ [nə̀mutə̀gnik] ‘mnemonic’

4. Motivations

Our proposal is that the processes of regressive manner assimilation, rhotacism, gliding, onset strengthening, epenthesis and deletion are different strategies triggered to optimize syllabic contacts or to avoid bad syllabic contacts: potential rising sonority transitions are avoided through regressive manner assimilation, rhotacism, gliding, onset strengthening and epenthesis, and decreasing sonority transitions are also improved by increasing the sonority of the consonant in coda position (via rhotacism or gliding). The analysis of these data strongly supports the claim that syllable contact should not be considered a single constraint which unconditionally bans rising sonority distance across syllable boundaries, but a hierarchy of constraints regulating all possible sonority distances (positive and negative) between heterosyllabic adjacent segments (Gouskova 2001, 2002, 2004). For a detailed discussion of the application of the proposal of Baertsch & Davis (2003) and Baertsch (2002) in terms of locally conjoined constraints, see Pons (in prep.).

4.1 Syllable Contact in Optimality Theory

(20) *Syllable Contact Law* (Vennemann 1988: 40)

«A syllable contact A^SB is preferable the less the consonantal strength of the offset A and the more the consonantal strength of the onset B».

(21) *Extended Syllable Contact Law* (Murray & Vennemann 1983: 520)

«The preference for a syllabic structure *A.B*, where *A* and *B* are marginal segments and *a* and *b* are the Consonantal Strength values of *A* and *B*, respectively, increases with the value of *b* minus *a*».

(22) *Extended Syllable Contact Law* (Clements 1990: 520)

«The preference for a syllabic structure *A.B*, where *A* and *B* are segments and *a* and *b* are the sonority values of *A* and *B* respectively increases with the value of *a* minus *b*».

(23) SYLLABLE CONTACT constraint

«Sonority should not rise across a syllable boundary.»

(24) Dorsey’s Law (Alderete 1995: 48)

«C1 < C2 by no more than one sonority interval, where C1 and C2 are adjacent and C1 is syllable-final and C2 is syllable-initial».

(25) Alderete (1995: 48)

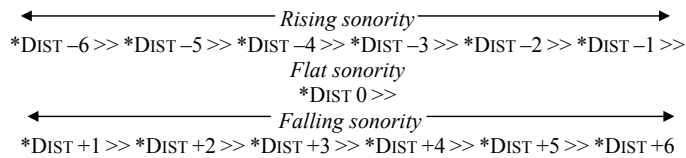
- a. /hipres/ → [hiperes] ‘know’ (*[hip.res])
- b. /haracabra/ → [ha.ra.cab.ra] ‘the taste’ (*[ha.ra.ca.ba.ra])

(26) Bat-El (1996: 304)

«σCONT: The onset of a syllable must not be of greater sonority than the last segment.»

«σCONTSLOPE: «The greater the slope in sonority between the onset and the last segment in the immediately preceding syllable the better.»

(27) Adapted from Gouskova (2001, 2002, 2004)¹⁴



(28) Matrix of consonantal contacts (adapted from Gouskova 2001, 2002, 2004)

-7	-6	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7
t.w	s.w	d.w	z.w	n.w	l.w	r.w	w.w	w.r	w.l	w.n	w.z	w.d	w.s	w.t
	t.r	s.r	d.r	z.r	n.r	l.r	r.r	r.l	r.n	r.z	r.d	r.s	r.t	
		t.l	s.l	d.l	z.l	n.l	l.l	l.n	l.z	l.d	l.s	l.t		
			t.n	s.n	d.n	z.n	n.n	n.z	n.d	n.s	n.t			
				t.z	s.z	d.z	z.z	z.d	z.s	z.t				
					t.d	s.d	d.d	d.s	d.t					
						s.t	s.s	t.s						
							t.t							

(29) Assumed sonority scale (Gouskova 2001, 2002, 2004)

glides > rhotics > laterals > nasals > voiced fricatives > voiced stops > voiceless fricatives > voiceless stops

(30) Matrix of consonantal contacts (Clements 1990: 319)

	V	G	L	N	O	
V	V.V	V.G	V.L	V.N	V.O	↑ more harmonic
G	G.V	G.G	SV.L	SV.N	SV.O	
L	L.V	L.SV	L.L	L.N	L.O	
N	N.V	N.SV	N.L	N.N	N.O	
O	O.V	O.SV	O.L	O.N	O.O	
						↓ less harmonic
	less harmonic		more harmonic			

¹⁴ In Gouskova (2001, 2002, 2004), rising sonority clusters are represented with the value ‘-’, while decreasing sonority clusters are represented with the value ‘+’. We follow the representation of Clements (1990) in which ‘-’ is used for rising sonority and ‘+’ for decreasing sonority.

V=vowels; G=glides; L=liquids; N=nasals; O=obstruents
 Assumed sonority scale: vowels > glides > liquids > nasals > obstruents

4.2. Regressive manner assimilation

4.2.1. Regressive manner assimilation in Majorcan and Minorcan Catalan

(31)

- cap mos* /kap##mɔs/ → regressive manner assimilation [kam.mɔs] ‘any bite’
- un peu* /un#pew/ → manner preservation [um.pew] ‘one foot’

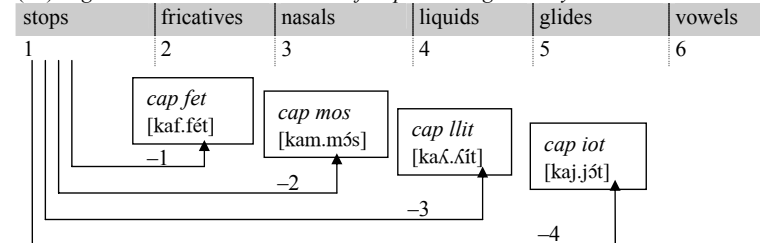
- dos llits* /doz##lits/ → regressive manner assimilation [doʎ.ʎits] ‘two beds’
- dos peus* /doz##pewz/ → manner preservation [dos.pewz] ‘two feet’

- un llum* /un#lum/ → regressive manner assimilation [uʎ.lum] ‘one light’
- un peu* /un#pew/ → manner preservation [um.pew] ‘one foot’

(32) Conventional sonority scale

OBSTRUENTS		SONORANTS			
stops, affricates <	fricatives <	nasals <	liquids <	glides <	vowels
1	2	3	4	5	6

(33) Regressive manner assimilation of stops in rising sonority clusters



(34) SYLLABLE CONTACT >> IDENT(-sonorant)

(35)

a. <i>cap fet</i> /kap##fet/ [kaf.fét] ‘any fact’	b. <i>cap mos</i> /kap##mɔs/ [kam.mós] ‘any bite’
/kap##fet/	/kap##mɔs/
SYLLCONT	SYLLCONT
IDENT(-sont)	IDENT(-sont)
a. [kap.fét] *!	a. [kab.mós] *!
b. ∅ [kaf.fét]	b. ∅ [kam.mós] *

c. *cap llit* /kap##ɫit/ [ka.ɫit] ‘any bed’

/kap##ɫit/	SYLLCONT	IDENT(-sont)
a. [kab.ɫit]	*!	
b. ∅ [ka.ɫit]		*

d. *cap riu* /kap##riw/ [kar.ríw] ‘any river’

/kap##riw/	SYLLCONT	IDENT(-sont)
a. [kab.ríw]	*!	
b. ∅ [kar.ríw]		*

e. *cap iot* /kap##jot/ [kaj.jót] ‘any yacht’

[kaj.jót]	SYLLCONT	IDENT(-sont)
a. [kab.jót]	*!	
b. ∅ [kaj.jót]		*

(36) Hypothesis also applicable to...

(37) Manner assimilation of sibilants and nasals in rising sonority clusters

a. <i>dos llits</i> /doz##ɫitz/ [do.ɫ.ɫíts]	b. <i>un llum</i> /un#lum/ [u.ɫ.ɫúm]
<i>dos rius</i> /doz##riwz/ [dor.ríwz]	<i>un iot</i> /un#jot/ [uj.jót]
<i>dos iots</i> /doz##jotz/ [doj.jóts]	

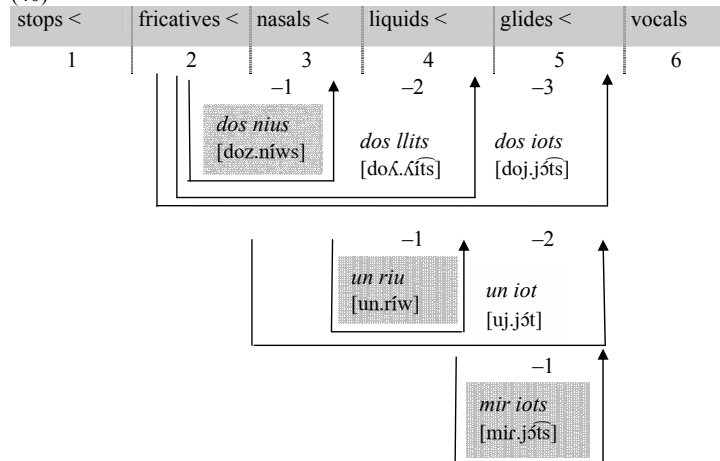
(38) But not for...

(39) Sibilant and sonorant preservation in rising sonority clusters

a. <i>dos nius</i> /doz##niwz/ [doz.níwz] (-1)	d. <i>mir iots</i> /mir##jotz/ [mir.jóts] (-1)
b. <i>un riu</i> /un#riw/ [un.ríw] (-1)	e. <i>corr iardes</i> /kor##jardəz/ [kor.jár.ðəs] (-1)
c. <i>vol iots</i> /vəl##jotz/ [vəl.jóts] (-1)	

Why sequences in (38) and (39) behave differently? (→ 40)

(40)



(41) Specific constraint?

*DIST ≤ -2: Sonority distances between adjacent consonants equal or lower than -2 are prohibited. (i.e. *DIST -2, *DIST -3...) (Pons 2003b, 2004a, 2004b)

(42) Extended Syllable Contact Law (after Murray & Vennemann 1983, Clements 1990)

«The preference for a syllabic structure A.B, where A and B are segments and *a* and *b* are the sonority values of A and B, increases with the value of *a* minus *b*.»

(43) The Syllable Contact Hierarchy (adapted from Gouskova 2004)¹⁵

*DISTANCE -6 >> *DISTANCE -5 >> *DISTANCE -4 >> *DISTANCE -3 >> *DISTANCE -2 >> *DISTANCE -1 >> *DISTANCE 0 >> *DISTANCE +1 >> *DISTANCE +2 >> *DISTANCE +3 >> *DISTANCE +4 >> DISTANCE +5

(44)

*DISTANCE -3 >> *DISTANCE -2 >> IDENT(sib) >> *DISTANCE -1

dos llits /doz##ɫitz/ [do.ɫ.ɫíts]

/doz##ɫitz/	*DIST -2	IDENT(sib)
a. [doz.ɫíts]	*!	
b. ∅ [do.ɫíts]		*

b. rius /doz##riwz/ [dor.ríwz]

/doz##riwz/	*DIST -2	IDENT(sib)
a. [doz.ríwz]	*!	
b. ∅ [dor.ríwz]		*

c. *dos iots* /doz##jotz/ [doj.jóts]

/doz##jotz/	*DIST -3	IDENT(sib)
a. [doz.jóts]	*!	
b. ∅ [doj.jóts]		*

d. *dos nius* /doz##niwz/ [doz.níwz]

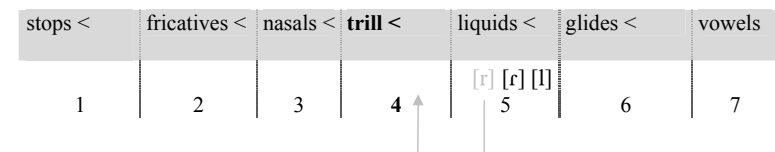
/doz##niwz/	IDENT(sib)	*DIST -1
a. ∅ [doz.níwz]		*
b. [don.níwz]	*!	

(45) Problem 2: nasal assimilation before laterals / nasal preservation before [r]

un llit /un##ɫit/ [u.ɫ.ɫit] Sonority distance: -1 (*[u.ɫit])

un riu /un##riw/ [un.ríw] Sonority distance: -1 (*[ur.ríw])

(46) First refinement of the sonority scale



Therefore...

- Distance between nasals and laterals & flap = -2
- Distance between nasals and trill = -1

¹⁵ See footnote 14.

(47) Phonological and phonetic evidence for this refinement

a. Trilling as onset strengthening (after Bonet & Mascaró 1997)

honrat /onr+a+d/ → [un.rát] ‘honest’
folrar /folr+a+r/ → [ful.rá] ‘to cover’

b. Regressive manner assimilation in Toba Batak (after Shin 1997: 169)

/marlaʒe/ → [malláʒe] ‘to swim’
 /tarsuŋgul##rohakku/ → [tarsúŋgulrohakku] ‘my spirit awoke’

c. Parker (2002: 233)¹⁶

	onset position		coda position	
	males	females	males	females
intensity	l > r > r	l > r > r	l = r	l = r
pressure	l = r > r	l = r > r	l = r	l = r
F1	l = r > r	l > r > r	l = r	r = l
flow	l > r > r	l > r = r	l = r	l = r
duration	r > l > r	r > l > r	l = r	l = r

(48)

a. *son llits* /son##lítz/ [soł.łíts]

/son##lít+z/	*DIST -2	IDENT(nasal)
a. [soł.łíts]	*!	
b. [soł.łíts]		*

b. *son rius* /son##riwz/ [son.ríwz]

/son##riwz/	*DIST -2	IDENT(nasal)	*DIST -1
a. [son.ríws]			*
b. [sor.ríws]		*!	
c. [son.ríws]	*!		

(49) Problem 3:

Manner preservation of the trill in the sequences of a trill followed by a glide: *corr iardes*
 [kor.jár.ðəs]

(50) Solution I: IDENT(rhotic) >> *DISTANCE -1

(51) Epenthesis in Catalan affects underlying sequences of a glide followed by a liquid

a. *centre* /sentr/ [sé.n.trə] ‘centre’
pacte /pakt/ [pák.tə] ‘pact’
 b. *camp* /kamp/ [kámp] ‘field’
port /pɔrt/ [pórt] ‘harbor’

¹⁶ I am grateful to John McCarthy and John Kingston for their advice on this subject.

c. *aire* /ajr/ [áj.rə] ‘air’
retaula /rətawl/ [rə.táw.lə] ‘altarpiece’

(52) Solution II: Second refinement of the sonority scale

stops <	fricatives <	nasals <	trill <	liquids & glides <	vowels
1	2	3	4	5	6

(53) Majorcan Catalan (Pons 2003b, 2004a, 2005): Split is blocked when it would produce a sequence of a glide followed by a liquid (violating the Sonority Sequencing Principle)

a. *any passat* /aɲ##pasad/ [áj.m.pə.sát] ‘last year’
 b. *mateix dia* /mətɛf##diə/ [mə.tɛj.ðíə] ‘the same day’
 c. *coll petit* /kòł##pətit/ [kòł.pə.tít] ‘small neck’ (cf. *[kò]l.pə.tít)

4.2. Regressive manner assimilation in Lengüadocian Occitan

(54) *ròc mòl* /ròk##mòl/ [ròm.mól] ‘soft rock’

/ròk##mòl/	*DIST -2	IDENT(-sont)
a. [ròm.mól]		*
b. [ròg.mól]	*!	

(55) *tot l'argent* /tut##l#ardʒent/ [tùllardʒén] ‘all the silver’

/tut##l#ardʒent/	*DIST -4	IDENT(-sont)
a. [tùllardʒén]		*
b. [tùt.lar.ɔʒén]	*!	

4.3. Regressive manner assimilation in Central Catalan and Eivissan Catalan

(56) Manner preservation when C1 = non-stop

a. *dos nius* /doz##niwz/ [doz.níws]

/doz##niwz/	IDENT(sib)	*DIST -1
a. [doz.níws]		*
b. [don.níws]	*!	

b. *dos llits* /doz##lítz/ [doz.łíts]

/doz##lítz/	IDENT(sib)	*DIST -3
a. [doz.łíts]		*
b. [doł.łíts]	*!	

c. *un riu* /un##riw/ [un.ríw] ‘one river’

/un##riw/	IDENT(nas)	*DIST -1
a. [un.ríw]		*
b. [ur.ríw]	*!	

(57) Manner assimilation in homorganic stop + nasal / lateral clusters

a. <i>cap mos</i> /kap##mɔs/ [kam.mɔs]				b. <i>pot limitar</i> /pɔd##limitar/ [pɔl.li.mi.tá]			
/kap##mɔs/	IDENT (lab)	*DIST-1	IDENT (-sont)	/pɔd##limitar/	*DIST-4	IDENT (-sont)	
a. ∅ [kam.mɔs]			*	a. ∅ [pɔl.li.mi.tá]		*	
b. [kab.mɔs]		*!		b. [pɔd.li.mi.tá]	*!		

(58) Manner assimilation when C1 = dental stop

/pɔd##mirar/	*DIST-1	IDENT(-sont)	IDENT(cor)
a. ∅ [pɔm.mi.rá]		*	*
b. [pɔd.mi.rá]	*!		

(59) Manner preservation in heterorganic stop + nasal / lateral clusters

a. [kal.li.mit]	*!		*
b. ∅ [kab.li.mit]		*	

(60) Manner assimilation in heterorganic stop + nasal clusters

a. <i>cap nas</i> /kap##nas/ [kab.nás]				b. <i>puc nedar</i> /pug##nedar/ [puŋ.nə.ðá]			
/kap##nas/	IDENT (lab)	*DIST-1	IDENT (-sont)	/pug##nedar/	IDENT (dor)	*DIST-1	IDENT (-sont)
a. [kab.nás]		*!		a. [puŋ.nə.ðá]		*!	
b. ∅ [kam.nás]			*	b. ∅ [puŋ.nə.ðá]			*
c. [kan.nás]	*!		*	c. [puŋ.nə.ðá]	*!		*

4.4. Rhotacism and gliding

(61) Rising sonority clusters: manner alternations

a. Majorcan Catalan	<i>dos mesos</i> /doz##mezz/ [dor.mé.zus] <i>dos nius</i> /doz##niwz/ [dor.níws]
b. Sardinian	<i>tres yannas</i> /tres##jannas/ [trɛr.ján.nas] <i>tres manos</i> /tres##manɔs/ [trɛr.má.nɔs]
c. Galician	<i>estás mal</i> /stas##mal/ [es.tar.mál]
d. Occitan	<i>cos nüt</i> /kɔs##nyt/ [kɔj.nýt] <i>es mòrt</i> /es##mɔrt/ [ej.mɔrt]

(62) Falling and flat sonority clusters: ALSO manner alternations

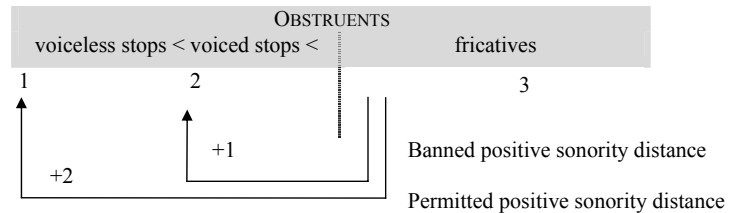
a. Majorcan Catalan	<i>dos bous</i> /doz##bɔwz/ [dor.bɔws]~[dor.bɔws] <i>dos díts</i> /doz##dítz/ [dor.dítz]~[dor.dítz] <i>dos gots</i> /doz##gɔtz/ [dor.gɔts]~[dor.gɔts] <i>dos focs</i> /doz##fɔkz/ [dor.fɔks]~[dor.fɔks]
b. Sardinian	<i>tres boes</i> /tres##boes/ [trɛr.bɔ.es]~[trɛr.βɔ.es] <i>tres domos</i> /tres##domɔs/ [trɛr.dɔ.mɔs]~[trɛr.ðɔ.mɔs] <i>tres gattos</i> /tres##gattɔs/ [trɛr.gát.tɔs]~[trɛr.yát.tɔs] <i>tres fizos</i> /tres##fizɔs/ [trɛr.fi.dzɔs]
c. Galician	<i>estás doente</i> /stas##doente/ [es.tar.ðo.én.te] <i>estás facendo</i> /stas##faθendo/ [es.tar.fa.θén.do]
d. Occitan	<i>los buòus</i> /luz##bjuwz/ [luj.'bjɔws] <i>las femmas</i> /laj##fennos/ [laj.'fen.nos]

(63) Why rhotacism and gliding do not affect sequences of alveolar fricative + voiceless stop?

(64) AGREE(voice)?

NO: *dos focs* /doz##fɔkz/ [dor.fɔks] ‘two fires’ (Maj. Catalan, optional)
tres fizos /tres##fizɔs/ [trɛr.fi.dzɔs] ‘three sons’ (Sardinian)
estás facendo /stas##faθendo/ [es.tar.fa.θén.do] ‘you are doing’ (Galician)
las filhos /laj.fĩ.ɔs/ ‘the daughters’ (Occitan)

(65) Third refinement of the sonority scale

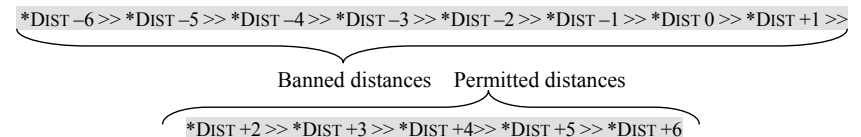


(66) Further support for this scale

Adapted from Blevins (1995: 211)

low vowels > non-low vowels > glides > liquids > nasals > voiced fricatives > voiceless fricatives > voiced stops > voiceless stops

(67)



(68) *DISTANCE 0 >> *DISTANCE +1 >> IDENT(sib) >> *DISTANCE +2

(68) Varieties of Majorcan Catalan with rhotacism

a. *dos focs* /doz##fɔkz/ [dor.fɔks] b. *dos dits* /doz##ditz/ [dor.dɪts] ‘two fingers’

/doz##fɔkz/	*DIST 0	IDENT(sib)	/doz##ditz/	*DIST +1	IDENT(sib)
a. [dos.fɔks]	*!		a. [doz.dɪts]	*!	
b. ∅ [dor.fɔks]		*	b. ∅ [dor.dɪts]		*

c. *dos pans* /doz##panz/ [dos.páns]

/doz##panz/	IDENT(sib)	*DIST +2
a. [dor.páns]	*!	
b. ∅ [dos.páns]		*

(69) Varieties of MaC with rhotacism vs. varieties of MaC without rhotacism

a. *dos nius* /doz##niwz/ [dor.níws] ‘two nests’ (rhotacism)

/doz##niwz/	*DIST -1	*DIST 0	*DIST +1	IDENT(sib)	*DIST +2
a. [doz.níws]	*!				
b. ∅ [dor.níws]				*	*
c. [don.níws]		(*!)		*	

b. *dos nius* /doz##niwz/ [doz.níws] ‘two nests’ (no rhotacism)

/doz##niwz/	IDENT(sib)	*DIST -1	*DIST 0	*DIST +1	*DIST +2
a. ∅ [doz.níws]		*			
b. [dor.níws]	*!				*
c. [don.níws]	*!		(*)		

(70) Interaction between regressive manner assimilation and dissimilation

a. *dos sons* /doz##sɔnz/ [dot.tsóns]

/doz##sɔnz/	*[sib][sib]	*DIST 0	IDENT(sib)	IDENT(-sont)
a. [dot.tsóns]		*!	*	*
b. [dos.sóns]	*!	*		
c. ∅ [dor.sóns]			*	*

b. *dos sons* /doz##sɔnz/ [dot.tsóns]

/doz##sɔnz/	*GEMSIB	*DIST 0	IDENT(sib)	IDENT(-sont)
a. ∅ [dot.tsóns]			*	
b. [dos.sóns]	*!			
c. [dor.sóns]			*	*!

(71) Why rhotacism and not gliding or lambdacism?*dos deus* /doz##dewz/ [dor.déws]

/doz##dewz/	*DIST +1	IDENT(sib)	IDENT(cons) ¹⁷	IDENT(cont)
a. ∅ [dor.déws]		*		
b. [doz.déws]	*!			
c. [doj.déws]		*	*!	
d. [dol.déws]		*		*!

(70) Occitan sonority scale

stops < fricatives < nasals < trill < liquids < glides < vowels

(71) Occitan gliding (TETU effect)

/luz#bjɔwz/	[luj.'bjɔws]	*DIST +1	IDENT(sib)	*DIST +4	*DIST +5	IDENT(cons)
a. ∅ [lur.'bjɔws]			*	*!		
b. [luz.'bjɔws]		*!				
c. [luj.'bjɔws]			*		*	*
d. [lul.'bjɔws]			*	*!		

4.4. Onset strengthening and epenthesis in Catalan

(71) Onset trilling

a. CONTIGUITY >> IDENT(tense) (→ epenthesis blocked / tensing permitted)

/onrə/	CONTIGUITY	IDENT(nasal)	*DIST -2	IDENT(tense)
a. ∅ [¹onrə]				*
b. [¹onrə]			*!	
c. [¹orrə]		*!		
d. [¹o.nə.rə]	*!			

b. CONTIGUITY >> IDENT(tense) (→ epenthesis blocked / tensing permitted)

/folr+a+r/	CONTIGUITY	IDENT(lateral)	*DIST 0	*DIST +1	IDENT(tense)
a. ∅ [ful.'ra]				*	*
b. [ful.'ra]			*!		
c. [fur.'ra]		*!			
d. [fu.lə.'ra]	*!				

¹⁷ It could be objected that this constraint could wrongly block gliding and favor rhotacism in sequences of a prepalatal sibilant followed by a consonant (cf. *mateix pa*); it should be noted that rhotacism is blocked in these last cases, due to the faithfulness constraint IDENT(pal) (see Pons 2005b).

(72) Morpheme boundary epenthesis

(IDENT(tense) >> ALIGN-Morpheme → tensing blocked / epenthesis permitted)

/tem+re/	*DIST -2	IDENT (lat)	IDENT (nas)	*DIST-1	*DIST 0	IDENT (tense)	ALIGN-Morph
a. [təm.ré]				*!		*	
b. [təm.ré]	*!						
c. ∅ [tə.mə.ré]							*
d. [tər.ré]			*!			*	
/bens+re/	*DIST -3	*DIST -2	IDENT (nas)	*DIST-1	*DIST 0	IDENT (tense)	ALIGN-Morph
a. [bəns.ré]		*!				*	
b. [bəns.ré]	*!						
c. ∅ [bən.sə.ré]							*
/ben+re/	*DIST -2	IDENT (lat)	IDENT (nas)	*DIST-1	*DIST 0	IDENT (tense)	ALIGN-Morph
a. [bən.ré]				*!		*	
b. [bən.ré]	*!						
c. ∅ [bən.dré]							*
d. [bər.ré]			*!				

(73) Distribution of vowel / consonant epenthesis & the quality of the latter

- A. Context-free markedness constraints on place of articulation
 *DORSAL >> *LABIAL >> *CORONAL
 B. Contextual markedness constraints
 AGREE(place), AGREE(voice), *INTERNAL COMPLEX CODA

4.6. Strategy selection in Catalan

In Catalan word-initial onsets violating the sonority sequencing principle are repaired via epenthesis (*Spiderman* /spiderman/ [əspidərmən]), whereas word-initial onsets respecting it are maintained (*plata* /platə/ [plátə]). The consonants which integrate the onset, however, must respect a minimum sonority distance. When this minimum sonority distance is not respected two strategies arise: epenthesis (*eslau* /slaw/ [əz.láw]) and deletion (*pneumàtic* /pnəwmatik/ [nəwmatik]). The first is the selected strategy when the onset has a sibilant in first position. The second is the selected strategy when the insertion of an epenthetic vowel would imply a bad syllable contact. Epenthesis, and not deletion, applies in the first case because sibilant segments show a strong resistance to deletion due to their perceptual prominence; the ranking of MAX(sibilant) above the *DISTANCE- constraints explains this behavior. The poor perceptual prominence of stops, on the contrary, explains their deletion motivated by the *DISTANCE- constraints.

4.7. Allomorphy selection in Catalan

Catalan —and also other Romance languages, such as Spanish— show a case of allomorphy selection which affects the prefix *-in* (/in/) that is clearly motivated by the SYLLABLE CONTACT hierarchy. This prefix surfaces as such (*i.e.* [in]) before a stem with an initial vowel or an initial alveolar obstruent (74a), as [in̩] before a stem with an initial dental stop (74b), as [im] before a stem with an initial labial stop (74c), as [im̩] before a labiodental fricative (74d), as [in̩] before a prepalatal fricative (74e), and as [in̩] before a velar stop (74f). These last cases are instances of regressive place assimilation, which, in OT terms, is explained by means of the constraint AGREE(place). Before a liquid, on the contrary, another allomorph (*i.e.* /i/) is selected (74g). The selection of this allomorph is motivated by the contextual markedness constraints *DISTANCE -1 and *DISTANCE -2.

(74)

a.	<i>inestable</i>	[inəstáb.blə]	‘inestable’
	<i>insegur</i>	[insəyú]	‘unsafe’
b.	<i>intranquil</i>	[in̩trəŋkíl]	‘unquiet’
c.	<i>impossible</i>	[im̩pɔsíbblə]	‘impossible’
d.	<i>infeliç</i>	[in̩fəlis]	‘unhappy’
e.	<i>injust</i>	[in̩ʒúst]	‘unfaith’
f.	<i>incoherent</i>	[inkwəren]	‘incoherent’
g.	<i>il·legítim</i>	[iləʒítim]	‘illicit’
	<i>il·limitat</i>	[ilimitát]	‘unlimited’
	<i>irresponsable</i>	[irəspunsábblə]	‘irresponsible’
	<i>irresoluble</i>	[irəzulúbblə]	‘irresoluble’

Grimalt (in prep.) adduces another interesting case of allomorphy selection, also syllabically driven. As it can be observed in (74b, 74c), the Catalan imperative forms of some second conjugation verbs display different stem allomorphs when they appear as free forms and when they appear followed by clitic pronouns. Interestingly enough, those verbs whose root ends in a glide do not show this alternation (74a). Stem allomorphy in (74b, 74c) clearly appears to avoid rising or flat sonority transitions.

(75)

a.	<i>beu</i>	/bəw/	[bów]	‘drink!’
	<i>beu-ne</i>	/bəw#nə/	[bəw.nó]	‘drink some!’
	<i>mou</i>	/mow/	[mów]	‘move!’
	<i>mou-la</i>	/mow#l+ə/	[mow.ló]	‘move it (fem.)!’
b.	<i>rep</i>	/rəb/	[rəp]	‘receive!’
	<i>rep-la</i>	/rəb#l+ə/	[rə.βó.lə]	‘receive her!’ (*[rəb.‘lə])
	<i>prem</i>	/prem/	[prém]	‘press!’
	<i>prem-la</i>	/premə#l+ə/	[prə.mó.lə]	‘press her!!’
	<i>ven</i>	/vən/	[vón]	‘sell!’

ven-la /vənə#l+ə/ [və.nə.lə] ‘sell it (fem.)!’ (*[vən.'lə])

c.

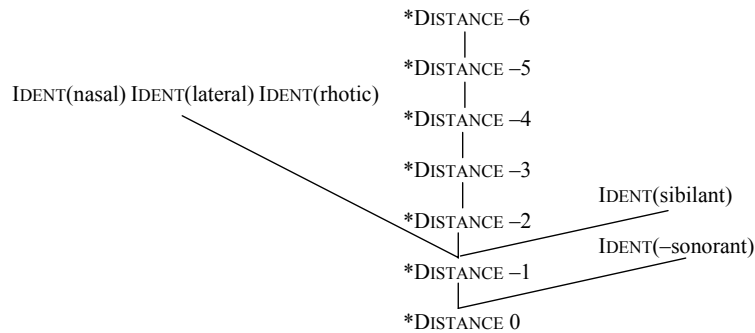
mol /mɔl/ [mɔl] ‘grind!’
 mol-la /mɔl#l+ə/ [mo.lə.lə] ‘grin her!’

5. Concluding remarks

The purpose of this paper was to analyze the nature and the effects of the SYLLABLE CONTACT constraint in Optimality Theory, departing from the observation of the phonological behavior of Romance languages, as far as alternations on manner articulation are concerned.

5.1. The analysis of regressive manner assimilation appears to be relevant theoretically. In Majorcan and Minorcan Catalan, rising sonority transitions are generally avoided. However, a certain degree of sonority rise is permitted, mainly when specific consonants (*i.e.* sibilants and sonorants) are placed in coda position. This pattern undoubtedly corroborates the need for splitting SYLLABLE CONTACT into a hierarchy of constraints targeting the permissible sonority distances across syllable boundary the effects of which can be mediated by the intervention of the faithfulness constraints that regulate manner featural changes, as argued for, dealing with other languages, in Gouskova (2001, 2002, 2004):

(76) Constraint ranking for MiC and for non-rhotacist varieties of MaC



This constraint hierarchy explains the matrix of permissible and impermissible transyllabic consonantal contacts of (77):

(77) Majorcan and Minorcan Catalan permissible and impermissible transyllabic consonantal contacts

Onset	6	5	4	3	2	1	
Coda	V	G/L	T	N	F	S	
6	V	0	+1	+2	+3	+4	+5
5	G/L	-1	0	+1	+2	+3	+4
4	T	-2	-1	0	+1	+2	+3
3	N	-3	-2	-1	0	+1	+2
2	F	-4	-3	-2	-1	0	+1
1	S	-5	-4	-3	-2	-1	0

V: vowels
 G/L: glides / liquids
 T: trill
 N: nasals
 F: fricatives
 S: stops

Banned sonority distance for non-sibilant obstruents
 Banned sonority distance for all consonants
 Permissible sonority distance for all consonants

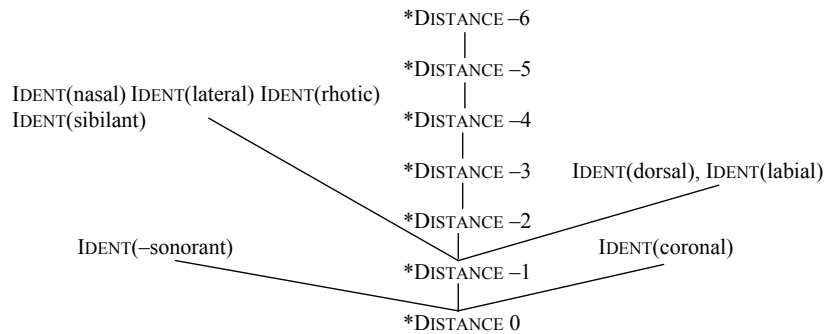
Gouskova’s approach to Syllable Contact based on *partial stratum* appears to be a satisfactory mechanism to account for regressive manner assimilation in Majorcan and Minorcan Catalan; it is unnecessary, therefore, to resort to more sophisticated mechanisms such as the one based on locally-conjoined constraints (Baertsch & Davis 2003; Baertsch 2002): regressive manner assimilation is sensitive to the absolute distance between heterosyllabic segments but not to the segments placed in coda/onset position in relation to consonant placed in onset/coda position.

5.2. The asymmetric phonological behavior of trills with respect to the rest of liquids as far as regressive manner assimilation is concerned induces to interesting predictions about the exact position of these sounds in the sonority scale of Majorcan and Minorcan Catalan: trills behave as less sonorous than other liquids, to the extent that they do not trigger manner assimilation of nasals but laterals do. As pointed out by Rice (2005: 31), based on evidence from phonological processes of neutralization, epenthesis and assimilation, «there is not a fixed relationship between [l/ and /r/], but which patterns as phonologically marked is determined on a language-particular basis».

(80) Sonority scale for Majorcan and Minorcan Catalan

stops <	fricatives <	nasals <	trill <	liquids & glides <	vowels
1	2	3	4	5	6

5.3. In most Catalan dialects (as Central Catalan and Eivissan Catalan), regressive manner assimilation just affects stops and it is avoided when it implies the loss of a non-coronal place of articulation. This corroborates again the poor perceptibility of stops in relation to the rest of consonants, as well as the unmarkedness of coronal segments with respect to labial and dorsal segments, which is expressed by the well-known hierarchy IDENT(labial), IDENT(dorsal) >> IDENT(coronal).

(81) *Constraint hierarchy for most varieties of Catalan*

(82) Korean (Shin 1997, Davis & Shin)

/syɲyən/	[sim.nyən]	'ten years'
/pat ^h +noŋsa/	[pan.noŋ.sa]	'(dry) field farming'
/kuk+mul/	[kuŋ.mul]	'broth'

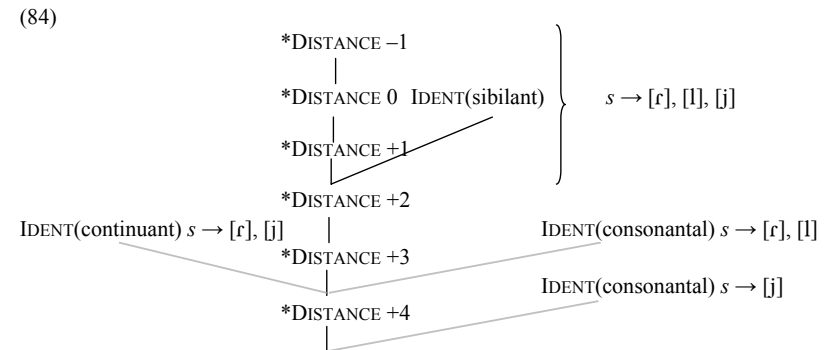
(83) Catalan (colloquial style)

<i>cap nas</i>	/kap##nas/	[kam.nás]	'any nose'
<i>puc nedar</i>	/puŋ##nedar/	[puŋ.nə.dá]	'(I) can look'

5.4. It should be noted that other interpretations of regressive manner assimilation could be adduced, such as the one which considers that the process is not syllabically driven but conditioned by the phonetic environment. It is a well-known fact that the perceptibility of consonants mainly relies on the acoustic cues of the following segments: the more sonorant is the second consonant of a cluster, the more likely the first consonant is perceived. Regressive manner assimilation, however, seems to contradict this tendency, as far as it precisely applies when the second consonant surpasses the first in sonorancy. In Steriade (2004), on the other hand, a syntagmatic contrast approach is argued for to account for the assimilatory behavior of Latin, where [d.l], [n.l], [d.n], [b.m] heterosyllabic sequences are resolved through regressive manner assimilation, whereas [g.l], [m.l], [d.m] and [b.n] are preserved: that is, the stop manner of articulation is preserved when it is sufficiently different from the next consonant and it is lost, due to specific phonotactic constraints, when it is not. This interpretation is not extensible to Majorcan and Minorcan Catalan, where regressive manner assimilation applies independently of the place-similarity of the adjacent heterosyllabic consonants, but it is to the behavior of most part of Catalan dialects, where regressive manner assimilation is sensitive to the similarity of the adjacent heterosyllabic consonants.

5.5. As stated in § 4.4, the analysis of rhotacism and gliding has also relevant theoretical implications. Firstly, it indicates that falling and flat sonority transitions are also susceptible to improvement: this fact advocates the claim according to which SYLLABLE CONTACT is not a single constraint categorically banning rising sonority but a hierarchy of constraints targeting negative, flat or positive sonority distances across syllable boundary. Indeed, in Majorcan

Catalan, Sardinian, Occitan and Galician, positive sonority transitions of +2 or greater are permitted, but not of lower sonority (i.e. +1, 0, -1, -2...). The subhierarchy {*DISTANCE -6 >> ... >> *DISTANCE 0 >> *DISTANCE +1}, therefore must dominate IDENT(sibilant). The intervention of IDENT(consanantal) and IDENT(continuant) determines the type of consonant resulting from the process of coda weakening:



5.6. The fact that these phenomena apply before sonorants, fricatives and voiced stops, but not before voiceless stops, indicates that the sonority of voiceless stops is lower than the sonority of voiced stops.

(85) *Splitting stops in the sonority scale*

Voiceless stops <	Voiced stops
1	2

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