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**THE ARTICULATOR GROUP AND LIQUID GEOMETRY:
IMPLICATIONS FOR SPANISH PHONOLOGY
PRESENT AND PAST***

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0. *Introduction*

The present work reconsiders several aspects of Spanish phonology in light of recent theoretical advances regarding the internal organization of the segment. In building on and synthesizing these insights, I propose a novel approach to the understanding of the ambivalent status of the feature [\pm continuant] of /l/, whose value is not universally accepted. Indeed, consider the following statement regarding continuancy from the foundational work in generative phonology, *The Sound Pattern of English*:

In the production of continuant sounds, the primary constriction in the vowel tract is not narrowed to the point where the airflow past the constriction is blocked; in stops the air flow through the mouth is effectively blocked...

...The characterization of the liquid [l] in terms of the continuant-noncontinuant scale is even more complicated. If the defining characteristic of the stop is taken (as above) as total blockage of air flow, then [l] must be viewed as a **continuant** and must be distinguished from [r] by the feature 'laterality'. If, on the other hand, the defining characteristic of stops is taken to be blockage of airflow past the **primary** stricture, then [l] must be included among the **stops**. (Chomsky and Halle 1968: 317-318) [emphasis added; DEH]¹

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¹ /l/ has been analyzed as [+cont] in several languages: Walsh Dickey (1997) cites Muesy (Shryock 1994), Zoque (Wonderly 1951), and Chipewyan (Li 1946, Chomsky and Halle

The paper is organized as follows: in §1, I present the data of the first part of the paper, the spirantization facts of Spanish, and lay out my theoretical assumptions regarding the articulator group hypothesis and liquid geometry; in §2, I show how applying the proposed liquid geometry to Modern Spanish allows us to resolve the issue of spirantization, and I review previous accounts; in §3, I discuss further implications for the treatment of several historical changes, including delateralization of [λ], formation of *ch*, intrusive stop formation, simplification of *-ns-* and other clusters, and vocalization of Late Latin /-l/ along with /-k, -g/. In §4, I offer concluding remarks.

1. *Primary data and other theoretical preliminaries*

The initial focus of this paper will be spirantization in Spanish. Data is presented immediately below, and the remainder of this section presents the articulator group hypothesis and its relevance to a revised liquid geometry.

Restricting ourselves to the distribution of the voiced obstruents in standard dialects of Spanish in Table 1, the generalization to be made is that stops occur after pause and after homorganic sonorant, while spirants obtain after a continuant. Thus, [b d g] and [β δ γ] are in complementary distribution (and so may be represented as /B D G/, unspecified for [±cont], in the spirit of Lozano 1978).

a.	b.	c.	d.	e.	f.
____	N ____	l ____	V ____	s ____	r ____
bote	umbote	e lβote	reβote	rezβala, lozβotes	arβol
daño	uñdaño	e lɰdaño	reɰdaño	dezɰe, lozɰaños	arɰe
gato	uŋgato	e lɣato	aɣatas	dezɣrana, lozɣatos	erɣido

(Adapted from Hualde 1989:25)

Table 1: *Distribution of [b d g] and [β δ γ] (standard dialects)*

However, [l] is ambiguous with regard to its value for [±cont], as seen in the bolded examples above in (c), where /lD/ yields [ɰd], but /lB, lG/ yield [lβ, lɣ]. Crucially, then, [l] appears before both stops and fricatives.

1968); Gussenhoven and Jacobs (1998) cite Frisian. Others who have argued that [l] is [+cont] are Harms (1968), Anderson (1974) and Ladefoged (1982) (all cited in Tatò 1981).

/l/ has been analyzed as [-cont] for Basque (Hualde 1989), English (McCawley 1979; cited in Walsh Dickey 1997), Scots English (Chomsky and Halle 1968), Gallo-Romance (Jacobs 1991, following Clements 1987), Korean and Luganda (mentioned in Walsh Dickey 1997; no references given). See also Kaisse (1998) for a review of evidence from a wider range of languages. (Kaisse arrives at the conclusion that laterals are [-cont].)

This matter has occupied the attention of theoretical phonologists for more than 30 years, going back to Harris (1969). Previous accounts have differed in how to treat the above data and in their assumptions about the [\pm cont] status of /l/. The most innovative and unorthodox of the approaches is that of Mascaró (1991), who views /l/ as phonologically [+cont] but phonetically [-cont] before /d/. Although this analysis has been sharply criticized for mixing phonetics and phonology and for circularity of argumentation, I vindicate the essential insight of it here.

Specifically, I consider the articulator group of Padgett (1992 et seq.), Selkirk (1991) and others, and extend its definitional tenet that the place of articulation and stricture of a segment are intimately related and are executed as a single gesture (in the spirit of Browman and Goldstein 1989), with stricture structurally dependent on place.

Here I reassess the feature geometry proposed by Walsh Dickey (1997) for liquid consonants and apply the articulator group structure in (a) to the liquid geometry in (b). We thus arrive at the revised structure of /l/ in (c), where both values of [\pm cont] are phonological and underlyingly present (all structures simplified for present purposes):

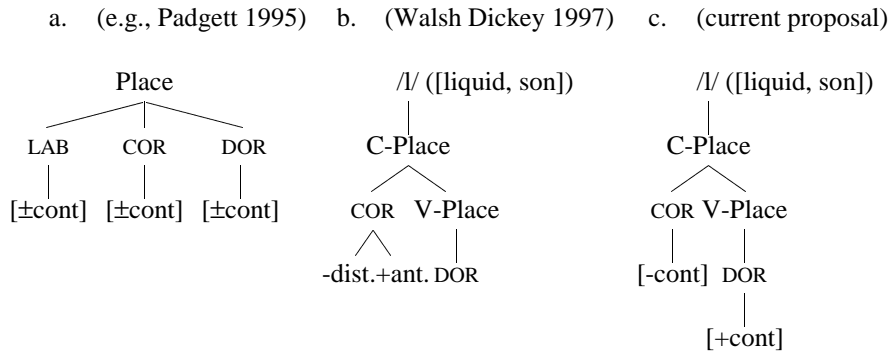


Figure 1: *The articulator group and its application to liquid geometry*

Ample evidence for the dual articulation of laterals is given by Walsh Dickey (1994, 1997). Relevant data supporting the separate specification of [\pm cont] for each articulator are well known facts about syllable-final /l/:²

² Padgett (1995, ch. 3 “Complex Segments”) makes a similar argument for Kabardian “harmonic clusters” (obstruents), which he argues require independent underlying [\pm cont] specifications for their multiple articulators. Though he treats the Spanish spirantization facts, he does not appeal to dual specification for /l/, as his work predates Walsh Dickey’s. However, see fn. 7 for a similar insight he pursues.

- (1) Changes in syllable-final position [l]:
- a. by loss of primary COR features (including [-cont]; vocalic DOR remains, so resulting segment is [+cont]):
 - l > u Belear Catalan, Old French
 - l ~ w Mehri (South Arabian Semitic), Brazilian Portuguese
 - l̥ > o Serbo-Croatian
 - l > ɣ English (no variety specified by Walsh Dickey)
 - (Also l > w in Polish in all positions)
 - b. by loss of secondary DOR features (including [+cont]; primary COR remains, so resulting segment is a [-cont] consonant):
 - l > r Florentine Italian, Modern Greek, Caipira Portuguese, Andalusian Spanish (presumes that tap [r] is [-cont])
 - l > t Gascon, Aranés (masc. sg. definite article *et* < Lat. ILLE; for Gascon, see Montreuil 2000.)

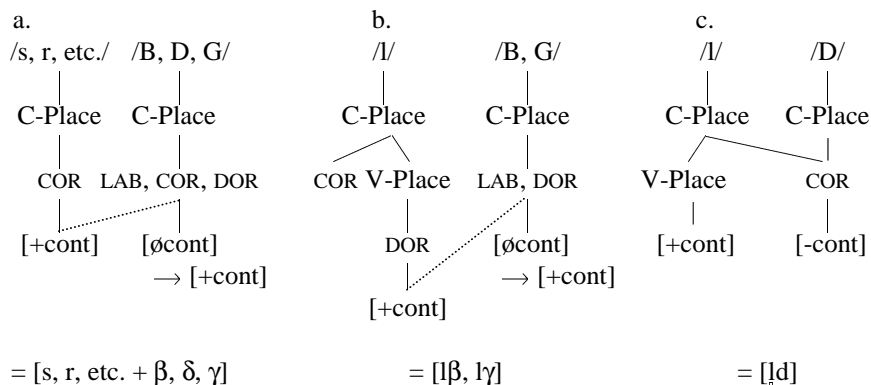
2. Application of proposed liquid geometry to Modern Spanish data

Having motivated this approach to the geometry of [l], I now discuss the implications of it for a variety of phenomena, occurring both in the Spanish of the present day and in the evolution of Spanish through history.

2.1. Spirantization in Standard Spanish

Given the nasal/lateral + obstruent assimilation imperative observed in Table 1 (b,c), and the rightward directionality of assimilation in continuancy (contrast (a) with (d,e,f); also $a[\beta\delta]icar$, $uste[\delta]$, e.g.), Spirantization may be formulated maximally simply, as the rightward spreading of [+cont]:

- (2) Spirantization in Standard Spanish: (SPIR)
 Spread [+continuant] (L > R)
 (Implemented straightforwardly within any theoretical framework.)



Given the modified articulator group of Figure 1, when place assimilation occurs, [-cont] necessarily follows the place of articulation (PA) of /N/ and primary (C-Place) coronal of /l/. Thus, /lD/ → [ld] (shown in (c)), but /lB, lG/ → [lβ, lɣ] (where the secondary or V-Place [+cont] of /l/ spreads).³

Stops [b, d, g] result after pause and wherever SPIR has not applied, as [-cont] is universally unmarked for obstruents:⁴

- (3) Default assignment for [±continuant]:
 [-sonorant] → [-continuant]
 (Kenstowicz 1994:64)

/|| Bote, Daño, Gato/ → [|| bote, daño, gato] (from Table 1 (a))

Spirantization (SPIR) is now phonologically motivated and internally consistent, as the alternations in Table 1 are understood as due to assimilation in continuancy, and all instances of [+cont] participate, with universal default rules filling in missing values when SPIR does not apply.

2.2. Comparison with previous approaches

In this section I review the analyses and assumptions of previous approaches, and show that we need not appeal to a Linking Condition to either block Spirantization (Harris 1984, Padgett 1995) or to enable it (Hualde 1989), nor to rule ordering of place assimilation and continuant spreading (as in all non constraint-based accounts) to account for the data: these are inextricably intertwined phenomena, and the former implies the latter, which falls out entirely from the geometry proposed here, seen above.

The current approach shares aspects of many previous studies, but is closest in spirit to those of Harris (1984) and Padgett (1995), though it differs

³ I assume that when the C-Place COR nodes are merged, the dental features of [d] retain the [-cont] value of [l]. Alternatively, [-cont] is assigned by a modified version of default (3). See (6b) below.

⁴ This also explains why when obstruents disagree in place of articulation, the continuants are disallowed (**i[nβ]ierno*, **la[mδ]a*, **albu[m γ]rueso*, etc., Harris 1985): the stops obtain via universal default. I thank Jim Harris for alerting me to this additional data. Further, for those dialects where [lb, lg, rd, rb, rg, sd] occur (e.g., those of Mexico City and Bogotá; see Harris 1984, Amastae 1995, Widdison 1997 and Carreira 1998 for discussion), the stops likewise result from (3). Finally, the difference among most Argentine Spanish speakers noted by Harris and Kaisse (1999) regarding the alternation between [dž] and [ž] (appearing after noncontinuants and continuants, respectively) appears to follow from (3) as well.

from these in important ways. Let me first present a synthesis of previous researchers' assumptions regarding various theoretical issues.

First, let us consider the underlying status of the voiced obstruents and their ultimate realization as either stops or fricatives. Most researchers (Lozano 1978, Goldsmith 1981, Harris 1984, Hualde 1989, Branstine 1991) have assumed that these are underspecified for [\pm continuant] and are represented underlyingly as /B, D, G/.⁵ I follow this approach here, as it allows for a maximally simple analysis of the stop-continuant alternations of Table 1 as a feature-filling operation, complemented by the universal default rule of [-son] \rightarrow [-cont] in (3), assuming the modified liquid geometry of Figure 1. While Harris (1984) also assumes the latter default rule to account for those stops that are not place-linked, Hualde (1989) must stipulate a separate rule of post-pausal stop formation that complements the Spanish-specific default rule of [+cont] assignment. Likewise, Carreira (1998) seems to adopt this into her optimality-theoretic account via the constraint VOICED-CONTINUANT ("if [+voice] then continuant"). However, given that she is silent on the matter of the underlying representation of the voiced obstruents, it is unclear how Carreira can account for the post-pausal stops. Padgett (1995) avoids the issue of default assignment by assuming (without argument) /b, d, g/, and Gnanadesikan (1997) does so as well, though there seems to be no clear statement in this regard. For the latter researchers, Spirantization consequently must be feature-changing.

Regarding the underlying [\pm cont] status of Spanish /l/, there has likewise been much debate. /l/ is assumed to be [-cont] by Goldsmith (1981), Tatò (1981), Hualde (1989), Branstine (1991) and Carreira (1998), but [+cont] by Harris (1984) and Kenstowicz (1994:36), who notes that "the inconsistent behavior of the lateral leaves the [\pm continuant] status of [l] unresolved." A mixed or ambiguous position in addition to that of the oft-criticized Mascaró (1984, 1991) is that of Padgett (1995), who claims that /l/ is "basically" [+cont], but is compatible with either value; that is, otherwise [+cont] [l] may take [-cont] by virtue of coronal linking to following [-cont] [d].^{6, 7}

⁵ Under Lexicon Optimization in Optimality Theory (Prince and Smolensky 1993, Inkelas 1994), /B, D, G/ are favored, as Spirantization would be feature-changing otherwise, thus incurring gratuitous violations of FAITHFULNESS constraints.

⁶ Gnanadesikan (1997) essentially agrees, though for her the feature in question is really the ternary-valued Consonantal Stricture (CS).

⁷ Interestingly, Padgett (p. 151:fn. 12) suggests for [l] that [approximant] may be borne by a separate articulator, DOR, argued to be part of laterals. He does not directly connect this to spirantization, though. Nonetheless, this is very much in the spirit of the present analysis.

Researchers have also offered differing characterizations of the best way to treat the stop-continuant alternations, specifically, whether $[\beta, \delta, \gamma]$ result from a genuine process of spirantization. For Harris (1984), Padgett (1995) and Gnanadesikan (1997), the answer is “yes”. These researchers believe that these alternations are due to a progressive assimilation in stricture (airflow); this is a natural assumption, and one made here as well. However, for Hualde (1989), Branstine (1991) and Carreira (1998), on the other hand, the fricatives result from default assignment of [+cont], a position at odds with assumptions regarding universal markedness.

As for the realizations [b, d, g], Harris (1984) argues that in these cases too there is progressive assimilation in stricture, and [-cont] propagates rightward from the nasal and lateral to yield the stops, and for Padgett (1995), this falls out naturally under the articulator group (also assumed here). For both authors, place-linked $[_d]$ escapes Spirantization due to the Linking Condition, under which association lines in structural descriptions are interpreted as exhaustive.⁸ For Hualde (1989), a rule of stop formation via spreading of [-cont] affects *only* place-linked segments, with the nasal and lateral spreading their [-cont] value to the following underspecified voiced obstruent; as mentioned above, his special rule of post-pausal stop formation yields the other instances of [b, d, g], and further, $[_l\beta, _l\gamma]$ result from his Spanish-specific default rule of [+cont] insertion.⁹

2.3. Summary of the present work

There is a phenomenon of “spirantization”, and it is characterized as the rightward spreading (understood nonderivationally, if one pleases) of the feature [+cont] (from vowels, glides, fricatives, and the V-Place of laterals). Nasal/Lateral Assimilation interacts with SPIR in that /B, D, G/ are provided

⁸ This definition of the Linking Condition, also called the Linking Constraint or Uniformity Condition (Kenstowicz 1994:413), comes from Hayes (1986), cited in Padgett (1995:148). However, because Harris’ (1984) rule does not specify the Place node, Spirantization should apply even when there are place-linked structures, and we should expect $*[_l\delta]$. Padgett remedies this by including Place in his rule of Spirantization, but notes (p. 149), however, that the matter is “patched up, but [the] question [is] still unexplained”. For Harris, [d] after [l] arises via universal default; for Padgett, [d] retains its underlying stop value.

⁹ Goldsmith (1981) argues for a “Minimal Distance Principle” that yields results similar to Hualde’s, in that a place-linked nasal or lateral spreads its [-cont] value, while when there is no assimilation, the closest vowel spreads its [+cont] value (following, $[_al.\beta a]$, as regressive assimilation; or preceding, $[_us.te\delta]$, as progressive assimilation). $[_l_l\ b, _l_l\ d, _l_l\ g]$ obtains via a separate rule, though it is unclear why $[_l_l\ \beta, _l_l\ \delta, _l_l\ \gamma]$ do not obtain via [+cont] spreading from the following vowel.

the specification [-cont] because they share a Place node with the preceding consonant, which entails that they will share stricture features. Nasals and laterals are alike at their primary articulation, being [-cont].

Like Harris, I argue that /l/ is [+cont], but at its secondary articulator node, and because I adopt Walsh Dickey's feature geometry and apply Padgett's own articulator group hypothesis to it, I avoid the need to invoke the dubious and stipulative Linking Condition. To invert the phrasing of Padgett, we might then say that [l] is "basically" [-cont] (as airflow is blocked at its primary constriction), but that its secondary/vocalic [+cont] has the same effect as the vocalic place of vowels and glides. That is, Mascaró was on the right track: [l] is both [+cont] and [-cont]; however, *both* are phonological. That is, [ɫd, ɫd̥, mb, ηg] obtain via assimilation in place,¹⁰ where assimilation in manner is an automatic consequence of the articulator group. Additionally, [|| b d g] surface by universal default, and thus there is no need for [+cont] as a Spanish-specific default rule. Finally, [lβ, lɣ] are due to spirantization (SPIR); markedness considerations rule out place assimilation, and there is assimilation in manner from the preceding [+cont] segment, here from the V-Place of [l].¹¹

3. *Implications for several historical changes*

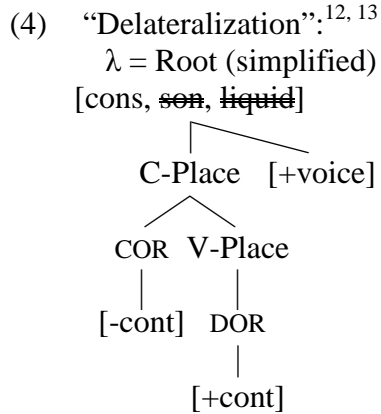
The proposal also accounts for several historical changes.

3.1. "Delateralization"

In early Old Spanish [λ] (< [lj]) became [dʒ] (ALIUM 'garlic' > [aλo] > [adžo] (> [ašo] > MSp. [axo] *ajo*)). Under the assumptions made here, this may be seen as simplification of the complex palatal via loss of [liquid] (and concomitantly of [+sonorant]); the result is a multiply-articulated voiced palatal obstruent that is both [- and + cont], i.e., affricate [dʒ].

¹⁰ Perhaps because Place features are not licensed in the coda, as argued by Carreira (1998).

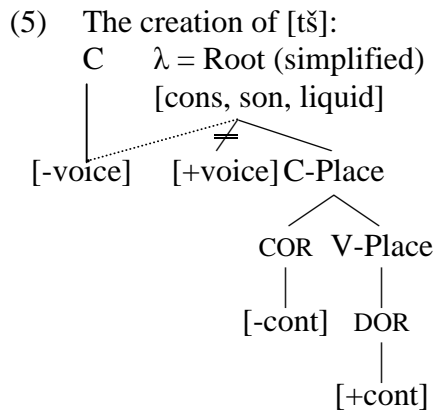
¹¹ However, as Harris (1985) notes, the specific class of triggering segments appears to vary according to dialect. That is, in dialects where stops occur after /r/ or where the stops [b, g] occur after /l/, it appears that we must restrict the process of Spirantization to the spreading of [+cont] from vowels only; the universal default rule (3) inserts [-cont]. Other dialect differences, including variation in the Argentine data of fn. 4, would presumably be handled in an analogous fashion. I leave this matter open here. I thank Jim Harris for making me aware of the Argentine data and for discussion of them.



(See Keating 1988 and Lipski 1989 for coronal-dorsal structure of palatals.)

3.2. Development of Latin Cl (voiceless C plus l) clusters to ch [tʃ]

Following the approach given here, *ch* may result from a stage of *Cλ (< /p, t, k + l/, where “delateralization” and assimilation in voicelessness yield [tʃ], e.g., MACULA ‘stain’ > *ma(n)kλa > *mancha*).



Here, by assimilation of [-voice], *Cλ yields [Cλ], analyzed in turn by the listener as [tʃ], and lexicalized as /tʃ/. (See Holt 1997, 1998 for details.)

¹² “Delateralization” is actually a misnomer if Walsh Dickey (1997) is right in eliminating [lateral] from the feature inventory; instead, “lateral” = doubly-articulated nonnasal sonorant.

¹³ This also accounts for those modern dialects that have eliminated [λ] for affricate [dʒ] or fricative [ʒ, ʃ], or for those where these sounds alternate freely. In other dialects [λ] may have become [j] first, with later (or stylistic) fortition to [dʒ, ʒ, ʃ]. I thank John Lipski for a question regarding this point that has obliged me to clarify my views.

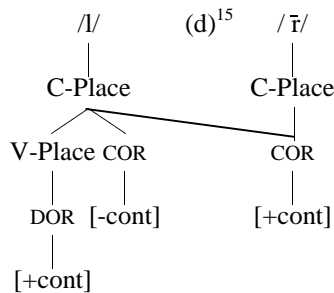
3.3. Intrusive Stop Formation

What happens when the sonorant does try to assimilate to a following [+cont] segment? Although the sonorant generally respects the place spreading imperative, marking conditions will disfavor success here, as according to the articulator group this would result in a continuant nasal or lateral (at its main articulation).

- (6) Marking conditions against sonorant continuants:
- a. *[nasal, +consonantal, +continuant]
“Continuant nasal consonants are disfavored”
(Branstine 1991:10, Padgett 1995:147, Carreira 1998:147)
 - b. *[lateral, +consonantal, +continuant]¹⁴
“Continuant laterals are disfavored”
(Branstine 1991:10, Carreira 1998:147)

Instead of violating these conditions, other consequences result. One such case is the well-known epenthesis of a stop consonant before [+cont] trill [r̄]:

- (7) Sp. future *sal(i)r + á > saldrá*; conditional *sal(i)r + ía > saldría*
(Also with nasals: *pon(e)r + á > pondrá*, and *pon(e)r + ía > pondría*; similar cases are cited in Padgett 1995, e.g., Kikuyu ‘hardening’.)



¹⁴ This actually must be understood as applying to the C-Place COR node of laterals, since, as I have argued here, /l/ is indeed [+cont] at its V-Place DOR node. Further, if Walsh Dickey (1997) is right regarding the invalidity of the feature [lateral], (6b) must be reformulated such that it applies only to doubly-articulated nonnasal sonorants.

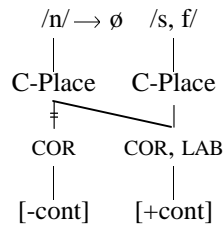
¹⁵ Given that the affricate-like structure that results is singly place-articulated, the transitional element is not “lateral” and so is not interpreted as [+sonorant] (see fns. 12 and 14); that is, it is interpreted as [d] (later lexicalized as /d/). The intrusive [d] after a nasal (*pon(e)r + á > pondrá*) presumably arises in a similar fashion. Contrast this with the linking of /lD/ in (2c), as well as /n + B, D, G/; given that /B, D, G/ are underspecified for [±cont], there is no affricate-like structure created and no transitional element results.

There now appears to be no need to invoke “bad syllable contact” as a theoretical prime to motivate the intrusive stop formation (Wetzels 1985, Clements 1987, Martínez-Gil 1991). Instead, epenthesis falls out from other constraints on the grammar, those of spreading and marking conditions.

3.4. *Simplification of clusters of nasal/lateral and [+continuant]*

Another possible resolution of the interaction between the spreading imperative and the marking conditions is the deletion of the potentially offending segment, thus vacuously satisfying the marking conditions of (6):

- (8) a. /-ns-, -nf-/ > /-s-, -f-/ (MENSA > *mesa*, INFANTE > OSp. *iffante*)
(Parallel cases cited in Padgett 1995, e.g., Lithuanian, Zoque, Malayalam.)
- b. Ptg. future and conditional forms *sal(i)r + á* > *sairá*; *sal(i)r + ía* > *sairia*; etc. (Also with nasals: *pon(e)r + á* > *porá*; *pon(e)r + ía* > *poria*; *terei*, *teria*; etc.)



This loss of /n/ in (a) is due to the interaction of the nasal place assimilation imperative with the marking condition against continuant nasals, which would result under the articulator group. To avoid violation of this constraint, /n/ is lost, presumably passing through a stage where nasality was retained on the preceding vowel, subsequently lost.

For the Portuguese cases in (b), we need to invoke the modified version of marking condition (6b). Here, the “lateral” place assimilation imperative urges assimilation of the C-Place of /l/ to the following [+cont] segment, but the high ranking of the marking condition favors the loss of /l/. Data of this type thus provide further evidence in favor of the [-cont] status of /l/.¹⁶

¹⁶ I leave open why it should be that both Spanish and Portuguese lose the nasal before the obstruents /s, f/ but differ in their resolution of the marking condition when a [+cont] nasal would arise before sonorant *r*.

3.5. Vocalization of /-l/ along with /-k, -g/

Finally, the approach taken here also allows us to understand why it is that /l/ patterned with the syllable-final velars [-k, -g] in Late Latin, which vocalized to [j] (or [w], depending on the preceding vowel):¹⁷

- (9) a. /-kt-/ OCTO ‘eight’ > Hispano-Romance and Modern Portuguese *oito*; NOCTE ‘night’ > *noite*
 /-gr-/ INTEGRU ‘whole’ > *enteiro*
 b. /-ulC-/ MULTU ‘much’ > *muito*; VULTURE ‘vulture’ > *buitre*;
 CULTELLU ‘knife’ > OSp. *cuchiello*
 c. /-alC-/ ALTERU ‘other’ > *outro*; ALTARIU ‘hill’ > *otero*

It has been unsatisfactorily explained so far why the more sonorous /-l/ should have been affected like /-k, -g/ (which became [-x, -ɣ], then [-j]). Previous approaches (Penny 1991, Holt 1997, 1999, e.g.) had to stipulate that /-l/ was velarized, and so underwent vocalization as did the pure velars. However, if we understand the motivation for vocalization to be the elimination of [-cont] features from coda position as a reaction to a constraint requiring increasingly sonorous moraic elements, then the change from /l/ to [j] may be seen as the suppression of primary C-Place COR due to its dominating the feature [-cont], which contributes less sonority than [+cont]. This is thus a more principled account of this change.

4. Summary and conclusions

In appealing to recent insights on the internal structure of the segment, namely the articulator group hypothesis and liquid geometry, this work sheds new light on several long-standing recalcitrant issues in Spanish phonology specifically, including spirantization and a host of historical developments, and phonological theory more generally, and promises much for analyses of

¹⁷ I thank Rafael Núñez Cedeño for raising the issue of how /-l/ is able to become either [-j] or [-w]. Upon considering these and other Romance data, it is clear that the surrounding context plays a decisive role: when the preceding vowel is [a], [-w] results; in other cases, the following consonant, usually [t] or [s], seems to require another COR articulation, here the palatal [-j]. (That is, featural agreement/assimilation appears to play a role.) I must assume that when C-Place COR is affected/suppressed, V-Place DOR may survive (as in (1a) and (9c)), or that the COR articulation may be preserved in the V-Place, but with the latter’s [+cont] specification (as in (9a,b)).

other languages where /l/'s behavior with regard to [\pm continuant] has been seen as ambivalent or contradictory in the past.¹⁸ These are welcome results.

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¹⁸ It would also be interesting to revisit the analyses of [\pm continuant] status of [l] in other languages (see also Kaisse 1998); also, Havana Liquid Assimilation (Harris 1985), Catalan Stop Assimilation, Cibaño liquid gliding (Guitart 1976, Núñez Cedeño 1997), /-l, -r/ neutralization in Andalusian and Caribbean Spanish; also, the historical change /ld/ > /ll/ in Aragonese (Menéndez-Pidal 1950:294-6), South Central Italian, inner Apulia and Modern Roman (*callo* for *caldo*, *sollato* for *soldado*; Rohlf's 1949:400) (all cited in Tatò 1981; for Aragonese, see also Lapesa 1981 and Zamora Vicente 1989.) This may perhaps be explained as assimilation of the lateral to the obstruent of the entire Place, not just the C-Place COR. Recall that under Walsh Dickey (1997), "lateral" really means "complex coronal-dorsal".

Another open question is the fuller consideration of the argument that [l] is like an affricate in having both a stop and a continuant articulation and, more broadly, the difference between (obstruent) affricates and laterals. I leave these matters for further research.

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