

MORE ON THE ORIGIN OF UVULAR [ʀ]: PHONETIC AND SOCIOLINGUISTIC MOTIVATIONS

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1 Introduction

Rhotic dorsalization, the change of an /r/ with a coronal point of articulation to a posterior one, is a phenomenon that occurs both in the Germanic Languages as well as in French. Germanic linguists have tried to explain the change at a segmental level, arguing that environments surrounding a coronal /r/ can account for the development of a dorsal point of articulation. At the same time, these researchers, have tended to exclude sociolinguistic factors that might account for rhotic dorsalization. Studies of French, by contrast, have not developed any theories that explain the segmental motivations for the acquisition of a posterior point of articulation, but they have advanced studies which describe the social factors involved. Because of the methodological differences between Germanic and French studies, a debate has materialized with respect to the origin of the dorsal rhotic in European languages.

On the one side, it is argued that the Germanic language family is responsible for the genesis of the posterior /r/. This claim is based on Old English and Old Norse data. Since the second member of diphthongs resulting from Old English breaking had the feature [+back], it has been argued that the [+back] feature of these vowels had to come from a contiguous [+back] segment. Since /r/ is one of the segments that followed vowels which underwent Old English Breaking, the argument follows that the /r/ is [+back]. Further support comes from the fact that, besides /r/, only velar segments are found in this position, namely, [x], [w], and [ɣ]¹. Runge (1974) expands on this argument, pointing out that if Old English /r/ were dorsal, than perhaps Germanic */r/ also was. Looking to North Germanic, he notes that there were two rhotic graphemes in Old Norse, one of which could have been coronal and the other dorsal.

The other side of the debate has existed since the late 19th century (cf. Trautmann 1880, 1887; Vischer 1889a, b). In this view, uvular [ʀ] is considered a French innovation, which was gradually adopted (and still being adopted) into German. More recently, Chambers and Trudgill (1998: 170-75) argue that the dorsal rhotic spread through Germany as a city-to-city shift, which is a common means for a linguistic feature to diffuse geographically (Labov 2007). Based on this diffusion pattern, Chambers and Trudgill argue that Paris is the most likely origin of the posterior rhotic.

This article has two objectives. First, it aims to contribute to the arguments against the hypothesis that the dorsal /r/ existed in Germanic languages before French. The received perspective therefore favors the notion that uvular /r/ defused into the Germanic Languages from a French origin. As a second objective, this article begins to examine dorsalization as a phonological process. An important difference is made here, from other investigations of rhotic dorsalization, namely, that the data will not be limited to French alone, but rather will look at the development of posterior rhotics as a change that effects Romance Languages as a whole.

¹ Whether Old English /l/ was velarized, is itself a topic for debate. Below it will be argued that any coarticulation of the /l/ phoneme is immaterial to the place of articulation of /r/.

Dorsal rhotics are found in all Romance languages except Romanian², yet our knowledge of this sound change within the family is rather limited to French.

In section 2 I argue that the coronal trilled [r] is more likely to uvularize than for a uvular [ʀ] to coronalize, because the latter is less marked than the former. Section 3 examines the development of a posterior rhotic in the Germanic languages. In section 3.1 I argue that Old Norse /r/ can be shown to pattern with coronals as a natural class. For this reason, I argue that the Old Norse /r/ must have been coronal. The implication of this argument is that previous claims that a dorsal rhotic might have existed in Old Norse are not correct. In section 3.2, I discuss Howell's (1991) monograph in which it is argued that the point of articulation of the Old English rhotic cannot be assessed from Old English breaking data. Finally in 3.3, I argue that the greater markedness of the apically trilled [r] than the uvular [ʀ] can help make valuable deductions about the history of the rhotic sounds in Germanic languages, specifically, that plausible reconstructions will only be able to posit the development of uvular [ʀ] as a fairly recent sound change. Section 4 goes on to examine rhotic dorsalization in the Romance languages. I conclude that neither phonetic condition nor syllable structure can explain the change, rather the development of a posterior point of articulation is best viewed as a decrease in markedness, reflecting a constraint that militates against coronal trills in all environments where they exist. Section 5 discusses and compares the Romance languages and Germanic languages. I argue that the Germanic languages show in their phonology that uvularization was acquired as a prestige pronunciation and not as a response to markedness pressures.

2 Markedness

In this section I argue that uvularization of a trilled coronal rhotic is a more common change cross-linguistically than for a uvular rhotic to become coronal. Apically trilled rhotics can be shown to uvularize in numerous languages, while the coronalization of a uvular rhotic is substantially less probable. This observation makes sense if the trilled uvular rhotic is less marked than the coronal trill, since historical changes generally proceed with diminishing grades of markedness. The implication of this historical generalization is that apically trilled [r] is more marked than uvular [ʀ].

Some researchers have made similar claims about the markedness of the apically trilled rhotic. Hammond (2000: 80) writes that, “[r] presents both the first and second language learner with highly significant difficulties. Such acquisitional difficulties, however, are readily explained: 1.) from a markedness perspective, [r] is a highly-marked segment; and 2.) articulatorily, the production of [r] requires considerable articulatory effort which involves both extreme muscular tension and a large quantity and expiratory speed of expelled air across the apex of the tongue.”

Numerous examples of rhotic dorsalization, for example, [r] > [ʀ], occur in the languages of the world. In Romance languages it is especially common, occurring in French (Haden 1955; Holmes and Schutz 1967: 97; Rickard 1993: 108-09; Sankoff and Blondeau 2007), Italian (Haller 1987: 398; Bertinetto and Loporcaro 1995: 133), Caribbean Spanish (Narvaez 1963; Lloyd 1989; Goldstein and Iglesias 1996), Portuguese (Rogers 1948; Noll 1997; Mateus and D'Andrade 2000) and Catalan (Wheeler 2005). This change also takes place in Armenian

² This interesting exception will not be addressed in this article. It is assumed that intense contact with Slavic languages is largely responsible for the difference. Future research on the subject is needed.

(Vaux 1998), modern Hebrew dialects (Devens 1981), and has been reported in Cambodian as well (Whitley 2003: 83).

Additional evidence can be found in Inuktitut languages, which are among very few languages to have uvular [ʀ] for the duration of their known histories. This language group shows absolute consistency in their retention of the feature [+back] in their dorsal rhotics. In fact, the only two variants across the 18 dialects (languages) in Dorais's (1986) study are the nasalized [ṛ̃] of Eastern Greenlandic and the [ʁ] of Labrador. Conversely, we do find one dorsal variant, [h], among the otherwise coronal /r/ sounds³ in the Polar Eskimo dialect⁴.

The unequal tendency of the apically trilled /r/ to uvularize suggests an improvement in markedness. Nevertheless, this development might be looked on with some suspicion. Cross-linguistically, [r] is sometimes said to be *unmarked*. Evidence supporting this notion comes from Maddieson (1984: 79). Given a random sampling of the world's languages, it can be stated with statistical confidence, that of the r-sounds, "the largest number are reported as trills." However, Maddieson (1984: 78) cautions, "It should be remembered that ignorance of how this group of sounds [i.e. rhotics] should be distributed into the various classes... adds a measure of uncertainty to some of the conclusions reached." He cites the work of Ladefoged, Cochran and Disner (1977), who observe that "very few languages have any trills at all." Maddieson (1984: 89) does not dismiss the possibility that "very many erroneous reports of trills occur in the literature."

While the change is also common in Germanic dialects, sociolinguistic explanations rival any phonetically motivated explanations for the change. Two important exceptions to this are the uvular rhotics of Yiddish (King and Beach 1998) and Northumbrian English (cf. Tristram 1995). The latter, is often mentioned in the literature, though, to my knowledge, has never been systematically examined⁵.

I cannot find a single example where some phonetic conditioning environment motivates the coronalization of a uvular rhotic⁶. Only sociolinguistically, for reasons of contact and/or prestige, does this change take place. The conclusion to be drawn from these observations, is that apically trilled rhotics are probably more marked than uvular trills⁷.

³ West Greenlandic [r], however, has apparently assibilated to [s].

⁴ These observations are based on the dialect distribution of the basic "j" phoneme. Note that the grapheme <j> denotes a coronal rhotic. Bergsland (1959: 8) describes <j> as "a more or less sibilant and palatalized alveolar or alveo-palatal trill." (cf. (Bergsland 1959)) It is always transcribed with a <j>, as Thalbitzer et. al. (1952: 113) explain, "Because of the very strong tradition of the use of <r> for the uvular spirant, this letter <r> could not be used for any other Eskimo phoneme..." (cf. (Thalbitzer et al. 1952))

⁵ Given that all the areas surrounding the dialect where uvular [ʀ] is commonly use the apically trilled [r], I argue that the uvular [ʀ] of the Northumbrian dialect is more likely the reflex of a historically coronal trill, than for the entire North of Britain to have had a uvular [ʀ] that became coronal with the exception of Northumbria.

⁶ Wiese argues that [ʀ] > [r] does occur, though the data he uses are clear examples of sociolinguistically motivated changes from dialect/language contact, they are *not phonetically* motivated (cf. (Wiese 2000))

⁷ Few phonetic explanations have been made that substantiate the change from [r] to [ʀ]. However, there are reasons why such a change might occur. Widdison (1998) argues that there might be physiological reasons for the change. I would suggest that duration might be a more helpful pursuit. As Lindau (1985) observes, the uvula generally vibrates faster than the tongue tip. Thus, the same number of vibration contacts can be made over a shorter period of time.

3 Against a Germanic Origin

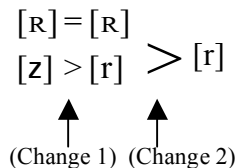
In this section I argue that a dorsal rhotic was absent in Germanic and that a posterior /r/ was not in the daughter languages of Germanic either. The three sections below correspond to three different reasons for rejecting the claim that a dorsal rhotic existed in the early history of Germanic languages. In section 3.1, I argue that Old Norse /r/ had a coronal place of articulation, because it can be shown to pattern with all the coronal sounds as a natural class. In section 3.2, I adopt the argument of Howell (1991) that data from Old English breaking provide no insight into the place of articulation of the Old English rhotic. Finally, in section 3.3, I argue that the cross-linguistic tendencies of rhotics makes it patently unlikely that the Germanic /r/ had anything other than a coronal place of articulation. If it were dorsal, explanations for the development of rhotics would involve vacillation between dorsal and coronal variants. Such wavering, not only lacks elegance as a hypothesis, but also crucially relies on a change that is extremely rare in the languages of the world, namely, coronalization of [R] to [r].

3.1 Coronal /r/ in Old Norse

In this section I argue against Runge's (1974) hypothesis that Germanic /r/ was dorsal. I present data that demonstrate the coronality of the Old Norse rhotic in a context where Runge's argument crucially requires the /r/ to be dorsal.

Runge (1974: 71-74, 89-95) argues that apically trilled [r] entered the language through rhoticism. It is his position that the coronal rhotic, arising from rhoticism, merged with the dorsal rhotic, the purportedly indigenous Germanic phoneme⁸. This hypothesis is summarized in (1).

(1) Runge's Hypothesis for [R] > [r]



This argument is built on the false premise that orthography *necessarily* reflects a phonetic reality. That is, orthography is the primary reason for the argument in (1). It stems from the observation that Old Norse runes retained two graphemes for the original /r/ and the /r/ resulting from rhoticism long after the change reached fruition (Gordon 1949: 259). However, orthography does not always offer perfect data. For example, the English graphemes <c> and <k> can both represent phonetic [k]. There is no compelling argument that exists which explains why both rhotics cannot share the same place of articulation.

Moving away from orthographically based argumentation, some proposals are based on the phonetic characteristics of /z/. These proposals maintain that the /r/ from rhoticized /z/ was similar to modern-day Czech /r/ (Haugen 1976). Still there is no reason to exclude other simple possibilities like [ɹ], or for that matter, that the two phonemes were identical. Issues with respect

⁸ This claim is especially significant since, as Catford (2001) observes, "in all Germanic languages except Gothic, rhoticism occurred."

to manner of articulation are left open to further research. Below I will only be concerned with place of articulation.

The historical development of Nordic onglides (onsets that have the glide [j] right before the nucleus) shows one very important instance where /r/ patterns with other coronal sounds, thus implying the coronality of the original rhotic (i.e. the /r/ that did not come about through rhoticization). Historically, Nordic languages came to have many onglides. The data in (2) are based on Zoëga (2004):

(2) Old Icelandic Onglides

- a. rj, lj, nj, mj, tj, þj, dj, bj, pj, fj, gj, kj, hj, sj
- b. flj, frj, brj, þrj, knj, grj, glj, hlj, snj, smj, stj, spj, skj

Most of these onglides come from one of two Germanic sources and are followed (save later diachronic change), by one of three possible nuclei: /a/, /o/ or /u/. The first source of onglides comes from Germanic /e/, which underwent breaking, e > ea > (ia >) ja. These onglides are thus followed by a nucleic /a/. The second source is the one of direct interest here. These onglides come from the reflexes of Germanic eu. When followed by a *non-coronal consonant*, eu > iu > ju but when they were followed by a *coronal consonant* eu > iu > jo (Haugen 1976: 268; Voyles 1992: 103, 11-12). Because /r/ patterns with all the other coronal consonants in this change, we may deduce that /r/ in this context was indeed a coronal sound.

It is especially significant that Old Norse /r/ had a coronal point of articulation because the /r/ that occurs in this position, that is, immediately preceding the syllable nucleus is *not* the /r/ that comes about from rhoticism, but rather the indigenous /r/ inherited from PGmc. and earlier. These data therefore indicate that Runge's argument with respect to North Germanic is not correct.

Since all modern dialects of Nordic languages have apically trilled /r/, and since sociolinguistic influences can explain the areas that have a uvular rhotic, arguments claiming that uvular [R] is the indigenous sound from Germanic times or earlier (cf. Runge 1974; Antonsen 1975; Ramat 1981), must be rejected.

3.2 Against the Assessment of Rhotic Place Based on Old English Breaking

This section examines the data from Old English Breaking that have been used to posit a dorsal rhotic in Old English. Howell's (1991) arguments against this analysis is summarized and adopted as the received view.

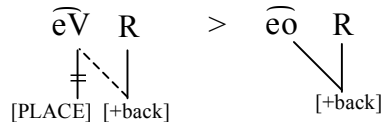
The data suggesting that Old English stood apart from other Germanic languages with respect to the place of its rhotic are given below. Researchers, who have examined these data, have sometimes concluded that the [+back] member of the diphthongs resulting from Old English breaking necessarily share features with an adjacent uvular rhotic. Typical examples of Old English breaking before /rC/ are taken from Runge (1974: 57-58) and Campbell (1959: 54-58):

(3) Breaking in Old English before /r/

<p>(a) /e/ > [eo]</p> <p>steorra ‘star’</p> <p>eorþe ‘earth’</p> <p>weorpan ‘throw’</p> <p>eorl ‘warrior’</p> <p>sweord ‘sword’</p>	<p>(b) /æ⁹/ > [ea]</p> <p>heard ‘hard’</p> <p>wearm ‘warm’</p> <p>bearn ‘child’</p> <p>hearg ‘temple’</p> <p>mearh ‘horse’</p>
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The examples in (3a) clearly demonstrate the argument that has been made. The second member of the diphthong is a back vowel. Thus, the feature [+back] must be explained. Since the first member of the diphthong is the front vowel [e] with the feature [-back], researchers considered the following environment as the only possible source for the feature [+back]. Back /r/ exists in numerous Germanic languages today, and the argument was consequently made that a dorsal rhotic could have existed since Old English times or earlier. In their view, the second member of the diphthong could elegantly be explained as the result of feature spreading. This analysis is shown in (4).

(4) The Segmental Approach to Old English Breaking



In (4) the feature [+back] spreads regressively from the dorsal rhotic to the second member of the preceding diphthong. This analysis plausibly accounts for the data in (3a) and (3b).

Additional evidence comes from the fact that Old English /r/ is not the only consonant that triggers diphthongization of a preceding monophthong. Runge (1974: 57-58) and Campbell (1959: 54-58) also cite the changes in (5) that take place before /l/, /x/ and /w/:

(5) Breaking in Old English before /l/, /x/¹⁰ and /w/:

<p>(a) [a] > [ea]</p> <p>eall ‘all’</p> <p>healdan ‘hold’</p> <p>healf ‘half’</p> <p>sealfian ‘anoint’</p> <p>seah ‘saw’</p> <p>eahta ‘eight’</p> <p>neahht ‘night’</p>	<p>(b) [e] > [eo]</p> <p>hweowol ‘wheel’</p> <p>þeow ‘servant’</p> <p>feoh ‘cattle’</p> <p>eoh ‘horse’</p> <p>feohtan ‘fight’</p> <p>cneohtas ‘boys’</p>	<p>(c) [i] > [io]</p> <p>niowul ‘prostrate’</p> <p>þriowa¹¹ ‘three times’</p> <p>asiowen¹ ‘shifted’</p> <p>tioghian ‘consider’</p> <p>Piohtas¹ ‘Picts’</p>
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⁹ The [a] that Runge posits is controversial; accounts of Old English generally posit [æ] because of “Anglo-Frisian Brightening.” (cf. Campbell 1959; Hogg 1992)

¹⁰ N.B. /x/ is represented by orthographic <h>

¹¹ This later becomes þriowa

Proponents of the argument that breaking was an assimilatory process point out that back realizations of /l/ indeed exist, e.g. [ɫ], and are common in Indo-European languages. Thus, if it is posited that the rhotic and the lateral both had dorsal points of articulation, then /r/, /l/, /x/, and /w/ –the breaking consonants– pattern together as a natural class of dorsal sounds.

It might be questioned how the dorsal sounds could be seen as a natural class if [k],[g], and [ɣ] do not pattern together with them. However, reconstructions of Old English uncontroversially claim that palatalization, like breaking, occurred sometime in the Early Old English Period (before 700 CE). Campbell's (1959: 173-78) account of palatalization claims that palatalization of velar sounds in the coda of a syllable occurs categorically when the nucleus of that syllable is [-back]¹². As a result of Old English Palatalization, the [+back] sounds [k], [g:], [g] became the [-back] sounds [ɣ] > [tʃ], [dʒ], [j] and [j]. Thus, if we assume that Old English palatalization pre-dates breaking, there is additional evidence supporting /r/, /l/, /x/ and /w/ as a natural class of dorsal sounds: velar obstruents were simply absent from this environment.

How convincingly the above analysis attests to a dorsal¹³ rhotic in Old English is questionable for several reasons. First, the assumption that the feature [+back] is responsible for breaking fails to capture important nuances of this process in Old English, namely, that /r/ and /l/ must be followed by a consonant in order to trigger breaking, while /w/ and /x/ do not. Additionally, no phonological account exists that explains why any IC-cluster might trigger breaking in /æ/, while breaking of /e/ is only motivated by /lx/ and breaking of /i/ never occurs before following /lC/. Quoting Lass and Anderson, Howell (1991: 69), criticizes how well phonological accounts are able to explain these nuances, "...we will not try to formalize this, as quite frankly we do not understand it: we have no idea of what... its motivation could possibly be, or even how to formulate it."

Howell (1991: 8) argues that, "A strictly segmental approach can offer little in the way of a principled explanation of the processes underlying breaking because it provides no way of treating the obvious fact that the breaking variants of /l/ and /r/ are determined by the liquid's role in the syllable." He argues that syllable structure is solely responsible for motivating breaking, namely, that syllables structured with a sonorant in the syllable rhyme that are followed- tautosyllabically or heterosyllabically- by a consonant motivate breaking of the syllable nucleus. With phonetic argumentation, Howell offers logical and principled reasons for the more anomalous distribution of IC clusters. These arguments might serve future phonological work to offer a formal, working explanation of the Old English breaking data.

For the time being, Howell's phonetic argumentation fails to unify /r/ /l/ /w/ and /x/ as a natural phonological class. However, his analysis holds with respect to the assignment of place features (namely, that place features cannot be assigned) based on the phenomenon of breaking: similar vocalic changes have occurred in modern dialects with apical and uvular trills alike. Given syllable structure, "the primary point of articulation of the syllable initial liquid variant

¹² Campbell does not actually make reference to syllable structure. However, the above description is completely true to Campbell's account of Old English Palatalization. Syllable structure is referenced by (Hogg 1992) to explain palatalization.

¹³ Although feature models like the one used in Lahiri and Evers (1991) generally maintain the assumption the feature [back] is dominated by a [DORSAL] node, the authors novel introduction of a [TONGUE POSITION] node might offer promising future research. If it were posited, for example, that the [back] feature, in addition to the [hi] feature, were dominated by the [TONGUE POSITION] node, then it would be possible for a segment to be [CORONAL] and [back].

(e.g. apical, velar, uvular for /r/), a primary concern of previous treatments of breaking, becomes essentially irrelevant.”

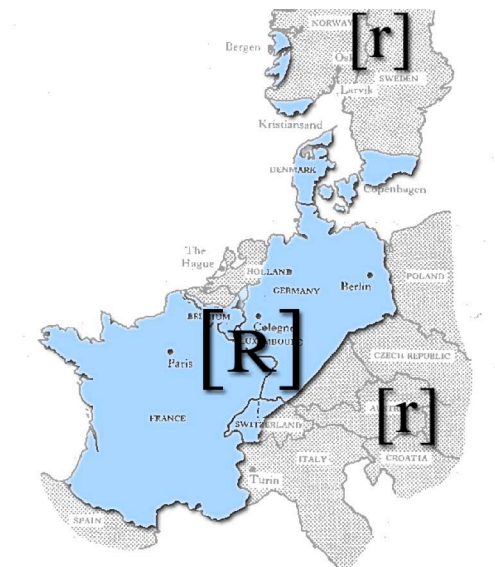
3.3 Violations of Markedness Supposing an Early Dorsal Rhotic

In this section, I argue that the implication of an early uvular rhotic in Germanic is that the coronal trill would have existed during some intermediate stage between periods of a dorsal rhotic, [ʀ] > [r] > [ʀ]. This chronology is problematic for two reasons: aside from a lack of historical evidence supporting the first change, [ʀ] > [r], it can be seen (from Section 2) as a change that is cross-linguistically marked. Only the second change, [r] > [ʀ], is a sound change that is seen with any demonstrable frequency.

The diffusion of uvular /r/ is also well documented in European linguistic history: Chamber and Trudgill (1998: 170) explain that, “it is possible to plot its [the uvular rhotic] progress to a certain extent. Beginning in Paris in the 1600s, uvular [ʀ] had reached Copenhagen by 1780, and by 1890 had spread to Southern Sweden, where it has remained stationary since the 1930s.”

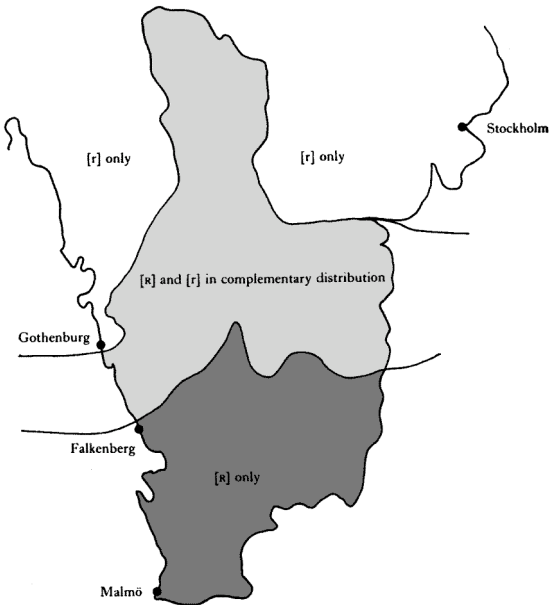
Chamber and Trudgill (1998: 170-75) make this claim based on the modern distribution of [ʀ]. They argue that the spread was originally a city-to-city sound change and that, once uvular [ʀ] spread into an urban center, it extended gradually outward. Map 1 (Based on Chambers and Trudgill (1998: 171)) shows the modern distributions of uvular [ʀ].

Map 1: Uvular [ʀ] in Europe

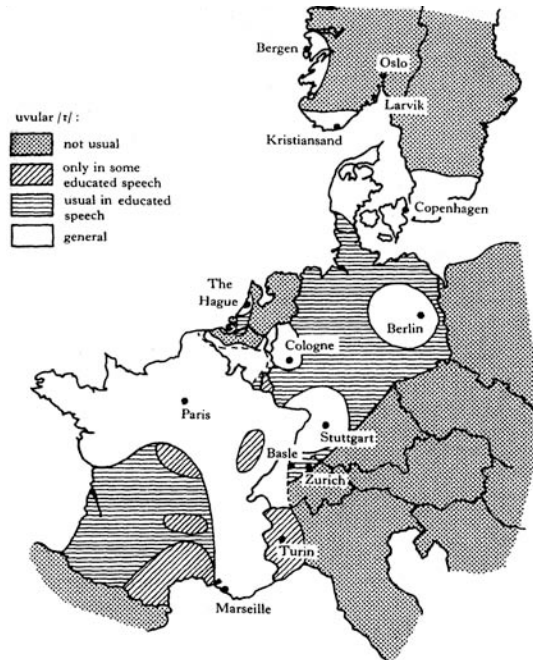


Map 1 is not immediately helpful in elucidating the historical development of the progression, first because it obscures the gradual spread of the uvular [ʀ] from urban centers, and second because it does not demonstrate a city-to-city shift since the area is continuous. Map 1, however, only shows the *presence* of uvular [ʀ], it does not provide information about frequency and use. Chambers and Trudgill (1998: 170-75) provide Maps 2a and 2b to address the short-comings of Map 1.

Map 2a: Uvular [ʀ] in Southern Sweden
(from Chambers and Trudgill 1998:172)



Map 2b: Uvular [ʀ] in Educated Speech
(from Chambers and Trudgill 1998:175)



Map 2a shows a typical example of gradual spreading. The southern tip of Sweden has categorical use of uvular [ʀ], the region between Gothenburg and Falkenberg has both [ʀ] and [r], and north of this region is categorical use of [r]. Map 2b shows that the areas where [ʀ] is general are surrounded by areas where [ʀ] is not general (here education is cited as the most important factor). In each area where [ʀ] is general (i.e. used by speakers of all levels of education) there is a major urban center. Accordingly, Map 2b indicates the plausibility of a city-to-city spread starting in Paris, working its way north and east into Germanic speaking regions. This is consistent with the fact that in the areas farthest from Paris, uvular [ʀ] is a very recent development that began around the early 1800s. In many of these areas today, speakers can still recall the fact that some people were still using an apical trill during their youth. Torp (2000: 82), speaking of his native Swedish dialect recalls, “When I was young, most of us youngsters had already dorsal /r/...”

Older accounts are also obtainable. Curme (1891: 3) observes, “All of our American grammars [of German] except one, so far as I know, recommend the lingual pronunciation of *r*. Very few of these grammars even mention that there is any other pronunciation of *r*, and yet in almost all the cities in Germany, whether larger or smaller, a quite different *r* is spoken from our English *r*, or the trilled *r* as pronounced by German peasants and actors on the stage. This *r* as usually heard in the cities is of a guttural nature, produced in the back part of the mouth by drawing the tongue back against the uvula...” Curme fails to mention how modish he is being, because it is not unlikely that the copyright years of some of the grammars he criticizes predate the change. After all, his statement would have been completely unthinkable just a few decades earlier.

Because the change from [r] > [ʀ] is a recent development in the Germanic Languages, there is little doubt that these languages all had coronal rhotics at the turn of the seventeenth century. Therefore, any argument favoring a dorsal rhotic in Germanic implies some earlier point in time (before 1600 CE, namely) when that posterior sound acquired a coronal point of articulation.

This change, however, would be a change of increased markedness. Thus, it is better to posit that uvularization was a recent change and that historically all the Germanic languages maintained a coronal rhotic. In conjunction with the fact that the Old Norse data from section 3.1 indicate that /r/ was coronal at a very early date, there is altogether little room for the possibility of rhotic dorsalization as an early Germanic development.

4. Dorsalization in Romance Languages

In this section I argue that dorsal rhotics developed in Romance Languages as part of a natural language change. Specifically, I will address two questions: 1.) Where does dorsalization occur? 2.) Why does dorsalization occur? Although, Portuguese, Spanish and Catalan (and possibly Italian) all show a consistency in the three environments (abbreviated with a capital “E”) where a dorsal rhotic is found– word initially (E1), syllable initially after a closed syllable (E2), and intervocally, where it contrasts with a flap (E3)– French data will preclude the possibility that syllable structure has anything to do with dorsalization. Rather, I conclude that the markedness of the apically trilled [r], described in section 2, was the only motivation for the change. That is, Romance Languages developed posterior rhotics as a repair strategy to deal with the markedness of [r].

Supporting the notion that rhotic dorsalization is a natural language change within the Romance Language family, is the fact that *all Romance languages with the exception of Romanian*¹⁴ have uvular [ʀ]. The uvular rhotic in these languages exists in varying degrees. In many of these languages- Spanish, Catalan, Italian, for example- the uvular [ʀ] is not the standard pronunciation¹⁵. In Portuguese uvular [ʀ] is common to many dialects, and likely to become a standard. In French, uvular [ʀ] has already become standard.

The data below demonstrate a coherence among the Romance languages with respect to the emergence of the dorsal rhotic. Specifically, the data show that, where uvularization occurs, it is the apically trilled phoneme only which uvularizes. Coronal flaps and other dialect-specific coronal rhotic allophones do not uvularize. Thus, the dialects of Portuguese, Spanish and Catalan¹⁶ where posterior rhotics are found, only acquire back pronunciations in the two environments where a historically coronal trill occurred. These environments are given in (6).

¹⁴ Because of the significant contact Romanian had with Slavic Languages, which have an apical trill, this exception is an outcome that might be expected.

¹⁵ Interestingly, for all the discussion of uvular [ʀ] in Germanic languages, there is surprisingly little discussion on uvularization of rhotics in Romance languages. This is of course particularly the case where the uvular rhotic is not standard. In Italian, for example, it is difficult to find more than 2 sentences that document the existence of uvular [ʀ], and of these statements, even fewer suggest that it might be part of a linguistic change. Rather, they claim that Italian uvular [ʀ] is either a speech pathology issue or a sort of affectation!

¹⁶ While Wheeler (2005:24) does not offer any data for the dialect where uvular /r/ is used, he states that a uvular trill replaces the alveolar trill. The description indicates that any instance of [r] may be substituted by [ʀ] (or [ʁ]).

(6) E1 and E2: Environments Where [r] > [ʀ] in Romance Languages

	Environment 1 (E1) Trill Word Initially	Environment 2 (E2) Trill After a Closed Syllable
Portuguese	<i>roda</i> [ˈʀɔdɐ] ‘wheel’	<i>palra</i> [ˈpaʔʀɐ] ‘s/he chatters’ <i>Israel</i> [iʒʀɐˈɛʔ] ‘Israel’ <i>desregrado</i> [diʒʀiɡˈradu] ‘unruly’
Spanish	<i>rojo</i> [ʀoɰo] ‘red’ <i>ratón</i> [ʀatoŋ] ‘mouse’	<i>Israel</i> [isʀael] ‘Israel’ <i>alrededor</i> [aʀɔdeðoɾ] ‘deregulation’
Catalan	<i>ros</i> [ˈʀos] ‘fair’ <i>refresc</i> [ʀəˈfrɛsk] ‘refreshment’ <i>refer</i> [ʀəˈfe] ‘re-make’	<i>Enric</i> [ənˈʀik] (given name) <i>folro</i> [ˈfoʎʀu] ‘lining’

Dorsalization occurs word initially. It also occurs syllable initially, following a closed syllable. A uvular sonorant is not the only reflex of the apical trill. Dialects that undergo dorsalization of /r/, generally report the following sounds: [ʀ], [ʁ], [x]. According to Whitlam, Davies and Harland (1997: viii-xi), the uvular rhotic is found in European Portuguese, while the velar fricative is found in Brazilian Portuguese. Goldstein and Iglesias (1996: 84), observe that “trilled /r/ becomes the uvular trill [ʀ] or the velar fricative [x]” in Puerto Rican Spanish; additional posterior articulations are noted by Lipski (1994: 333). Similarly, Wheeler (2005: 24) notes that, “In North Catalonia, and in the town of Sóller (Majorca), a uvular trill ([ʀ]) or approximate ([ʁ]) can be heard instead of an alveolar trill.”

While uvular [ʀ] exists in Italian, there is little or no description of dialects with uvular [ʀ]. Bertinetto and Loporcaro (1995: 133) describe the phenomenon as “an individual variant¹⁷.” But these remarks do not tell us if the individuals use [ʀ] categorically, or if they use [ʀ] allophonically with [r], or if the choice between [ʀ] and [r] is completely random. Contrary to Bertinetto and Loporcaro, Haller (1987: 398) claims that “Uvular /r/ is heard in Calabrese and Sicilian.” This description suggests a dialect specific replacement of the apical [r] for the uvular [ʀ]. Further data are needed to get a clear picture of uvular [ʀ] in Italian.

Portuguese, Spanish, Catalan, and Italian all show a contrast between [r] and [ʀ], intervocalically. The Romance languages with this contrast only uvularize the trill. The flap always remains coronal¹⁸. The data in (7) make this contrast explicit.

¹⁷ It is commonly asserted by Italians that the uvular pronunciation of the rhotic is either an affectation or an issue of speech pathology. Given the behavior of other Romance languages, however, this assertion is highly improbable.

¹⁸ It is probable that the environments for the dorsal rhotic in Italian are identical to the other Romance languages, but there are again no data available to confirm this. Different syllabifications are generally assumed for the intervocalic trill Italian as opposed to those of Spanish, Portuguese and Catalan. This might cause some differences in the dorsalization process.

(7) E3 and E4: Environments Where [ʀ] and [ɾ] Contrast in Romance Languages

	Environment 3 (E3) trill	Environment 4 (E4) flap
Portuguese	<i>carro</i> [ˈkaʀu] ‘car’ <i>ferrar</i> [ˈfɛʀa] ‘to spike’	<i>caro</i> [ˈkaɾu] ‘expensive’ <i>fera</i> [ˈfɛɾa] ‘wild animal’
Spanish	<i>carro</i> [kaʀo] ‘car’ <i>perro</i> [peʀo] ‘dog’	<i>caro</i> [kaɾo] ‘expensive’ <i>pero</i> [peɾo] ‘but’
Catalan	<i>carro</i> [kəˈʀat] ‘cart’ <i>ferro</i> [ˈfɛʀu] ‘iron’	<i>cara</i> [kəˈɾat] ‘face’ <i>fero</i> [ˈfɛɾu] ‘I injure’

Since the trilled /r/ and the flapped /r/ can be shown to contrast intervocalically, I assume that /r/ and /ɾ/ are both phonemes. It has been argued for Portuguese (and can be easily extended to Spanish and Catalan) that [ʀ] and [ɾ] are both phonemes of /r/, such that the trilled rhotic surfaces word initially or syllable initially when preceded by a closed syllable (cf. Mateus and D’Andrade 2000: 15-16). According to this analysis, the word *carro* ‘car’ would have the following phonemic representation: /kaʀ.ro/. Since the second flap is preceded by a closed syllable, the word surfaces as [kaʀ.ro]. If this analysis were correct, however, we would expect to find the form [kaʀʀo] wherever uvularization occurred. This articulation is not attested¹⁹.

If we assume that /r/ and /ɾ/ are both phonemes, the dorsalization data for Spanish (and all the Romance languages that contrast /r/ and /ɾ/) make more sense. Only the /r/ phoneme dorsalizes. The flap remains coronal. Beyond the environment where the flap contrasts with the trill, there are three environments where flaps are found. These are given in (8).

(8) E4, E5, E6: Environments Where [ɾ] is Found

	Environment 4 (E4) Flap after an opened syllable	Environment 5 (E5) Flap in a non-initial onset	Environment 6 (E6) Flap in a syllable coda
Portuguese	<i>parar</i> [pə.ra] ‘to stop’	<i>atributo</i> [ɐ.ɾi.bu.tu] ‘attribute’ <i>praça</i> [pɾa.ʃa] ‘square’	<i>sardinha</i> [sɐɾ.dɨ.ɲɐ] ‘sardine’ <i>arco</i> [aɾ.ku] ‘arch, arc’ <i>mar</i> [maɾ] ‘sea’

¹⁹ Navarro Tomás (1948) describes an “rr mixta” for Puerto Rican Spanish. The term is not adopted in the more recent work of Medina-Rivera (1999); nor is it used by Lipski (1994). The “rr mixta” incorporates several sounds (Navarro Tomás 1948: 89-90). It is defined as an /r/, “que consiste en una articulación que empieza por un elemento fricativo de timbre vacilante, ya alveolar o ya velar, y termina con el sonido de una rr alveolar semivibrante o fricativa.” This definition includes articulations such as [ʀɾ] and [ɣɾ], though also forms like [ʃɾ] and [rʃ] (and still other possibilities). Because forms like [ʃɾ] and [rʃ] provide phonetic information— but do not have much significance with respect to the phonology of Puerto Rican Spanish— the “rr-mixta,” as a category of rhotics, is of little value. The term mixes phonetics and phonology, leaving no way to separate what any given token describes. Forms like [ʀɾ] and [ɣɾ] are absent from the recent literature on the subject. They would, in any case, represent a surface form that reverses the surface form predicted from an underlying /r.r/.

More on the Origin of Uvular [ʀ]: Phonetic and Sociolinguistic Motivations

Spanish	<i>parar</i> [pa.ɾaɾ] ‘to stop’	<i>tren</i> [tɾen] ‘train’	<i>flor</i> [flɔɾ] ‘flower’
			<i>sortija</i> [soɾ.tiɰa] ‘ring’
Catalan	<i>pare</i> [pə.ɾə] ‘father’	<i>prou</i> [pɾəw] ‘enough’	<i>màrtir</i> [mə.ɾiɾ] ‘martyr’
	<i>centurió</i> [sentu.ɾjo] ‘centurion’	<i>refresc</i> [ɾəˈfɾesk] ‘refreshment’	<i>caràter</i> [kəɾaktəɾ] ‘character’
	<i>quedarà</i> [kəðə.ɾa] ‘stay.3sg.fut’		
	<i>caràter</i> [kə.ɾaktəɾ] ‘character’		

The /r/ phoneme often develops allophones, especially in E6. The allophone that develops, always maintains a coronal place of articulation. For example, Catalan data show sensitivity to stress. Syllable-final flaps of stressed syllables become ‘short trills,’ which are generally characterized as having 2 contacts. Additionally, Wheeler (2005) observes that Catalan has a voiceless short trill that is in variation in this position. Puerto Rican Spanish has a well documented tendency of lateralizing the coronal flap. While lateralization is most common in E6, examples such as [tlen] for *tren*, ‘train,’ have been documented. A complete discussion of the flaps is not taken up here, as the present study focuses on the trill. Despite the broad range of variants that appear in flapped environments, at least one thing remains consistent across all the dialects: they always maintain a coronal place of articulation.

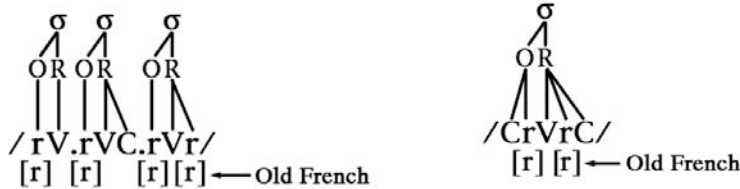
French differs from other Romance Languages because there is no flap. Haden (1955: 207) explains that there is only one /r/ phoneme since [r] and [ɾ] merged together in Old French, “there is in Modern French, then, nothing to parallel the situation in Spanish and Portuguese, where [r] contrasts with [ɾ].” For this reason, we find uvular [ʀ] in all five environments discussed above, as opposed to the romance languages contrasting [r] and [ɾ], which only uvularize in three environments. The data in (9) are taken from Warnant (1987).

- (9) E1: [ʀ] occurs word initially
rhum [ʀɔm] ‘rum’
réel [ʀeɛl] ‘real’
- E2: [ʀ] occurs syllable initially, when the preceded by and closed syllable
chasseresse [ʃasʀes] ‘huntress’
- E3/E4: [ʀ] occurs syllable initially, when the preceded by and opened syllable
béret [beʀe] ‘beret’
guérir [geʀi:ʀ] ‘to cure, to heal’
- E5: [ʀ] occurs as a non-initial member of a syllable onset
près [pʀe] ‘near’
atrocité [atʀɔsite] ‘atrocité’
- E6: [ʀ] can occur as a syllable coda
 (though ø also occurs *sculpter* [skyltɛ:] ‘to sculpt’)
guérir [geʀi:ʀ] ‘to cure, to heal’

The French data are significant because they offer special insight into the change from apically trilled [r] to uvular [ʀ]. Whereas the Portuguese, Spanish and Catalan data, above, might lead us to believe that syllable structure is the most important conditioning environment to examine with respect to the change, the French data elucidate problems with this assumption.

In Old French there was a merger of [r] and [ʀ]. This is generally dated between 1000-1300 (Holmes and Schutz 1967: 41). Because uvularization of /r/ is never posited before 1500, there can be little doubt that the merger took place before uvularization. This chronology is of material importance because it indicates that syllable structure did not effect the change from [r] > [ʀ]. The reason is that pre-1600 syllable positions in which [r] occurred, were as follows:

(10) Positions of [r] in the Old French Syllable



In modern French, each of the trilled coronal rhotics in (10) becomes [ʀ]. If uvularization had anything to do with syllable position, we would expect uvular [ʀ] in some positions, and apical [r] in others, corresponding, in principle, to the other Romance languages. This distribution is not what we find, however. Instead, we see a categorical change from the apical phoneme to the uvular one²⁰.

5 Discussion: Why Germanic Languages Show Sociolinguistic Diffusion in their Phonology

In this section I argue that Germanic languages demonstrate in their phonology, the same diffusion hypothesis described in section 3.3. This is because some of the dialects that acquired uvular [ʀ], did not do so completely, resulting in allophony with the coronal trill. The fact that the coronal trill is still extant, is taken as evidence that uvular [ʀ] in Germanic languages did not emerge in response to markedness, but rather to forces of prestige. Behind this statement is an assumption that a response to markedness would tend to cause categorical dorsalization of the trilled rhotic, while a response to prestige would allow acquisition to be imperfect. These ideas are elaborated below.

Part of uvularization might simply boil down to a constraint as straightforward as *[r] ‘apically trilled rhotics are marked.’ A language prioritizing this constraint would need to adopt other less marked rhotic alternatives. In the case of Romance languages, dorsal varieties have consistently been sought out. From this regularity it follows that the conditions necessary for rhotic dorsalization were present in the Romance languages. Thus, an important question to ask is this: how do we know that the circumstances necessary for rhotic dorsalization were *not* present in the Germanic languages?

I argue that the critical difference between Romance and Germanic languages with respect to rhotic dorsalization, is that Germanic languages show diffusion errors (after (Labov

²⁰ It would be logical to assume that frication of the uvular [ʀ] to [ʁ] had something to do with syllable structure as well. However, the data are inconsistent with this notion as well. Since uvular /r/ developed a fricative articulation in all environments, including pre- and post-consonantly. This would appear to be degradation to a previously less marked syllable. For a dissenting perspective, see Howell (1987).

2007)). Romance languages, do not have allophony between a dorsalized rhotic and a coronal one; the dialects that uvularize are responding to conditions that make the coronal trill ungrammatical. That is, the uvular [ʀ] is motivated as an improvement in markedness. The farther we get from the focus of prestige (i.e. Paris), however, the more likely it is in the Germanic languages for mutations to interfere with the diffusion of the prestige sound. These mutations imply that the adoption of the uvular [ʀ] was not motivated as an improvement in markedness; Germanic dialects permit the uvular [ʀ] to be allophonically articulated side-by-side an apically trilled [r]. Therefore, the apically trilled [r] cannot be said to be marked in all contexts, the way it is in dorsalizing Romance languages. The instances of allophony in Germanic languages might turn up because the trilled [r] in these languages was not marked. Rather, the /r/ was simply replaced in order to include the more prestigious sound in its system.

Labov (2007: 349) argues that linguistic features which defuse into other regions are more likely to mutate because the individuals involved with the propagation of the feature are adults, who are imperfect language learners, “The limitations on diffusion are the result of the fact that most language contact is largely between and among adults. It follows that structural patterns are not as likely to be diffused because adults do not learn and reproduce linguistic forms, rules, and constraints with the accuracy and speed that children display.”

The diffusion of uvular [ʀ] into the Germanic languages is consistent with the pattern noted by Labov. In particular, dialects of Germanic languages that are at the periphery of the change from coronal to dorsal /r/ reveal anomalies from the pattern in Romance languages (i.e. categorical dorsalization).

Torp (2000: 78-79) describes the main pattern of Swedish allophony as follows: “[ʀ] is used in initial position, and in medial and final position [it is used] after short vowels. In all other positions [r] is used.” Torp (2000: 78-79) also observes that “the distributional rules for [ʀ] and [r] vary somewhat with in the area.” Reed (1947) records a Pennsylvania German dialect where [r] and [ʀ] exist in an allophonic relationship. Quite different from Swedish, this dialect uses [r] before vowels and [ʀ] before consonants. Kranzmeyer (1956, reported in Howell (1991: 18)) observes uvular [ʀ] before [–continuant], [CORONAL] segments.

The fact that the coronal trill still exists in these dialects, indicates that the markedness of the apically trilled [r] in Germanic languages is different than in Romance languages. Specifically, where uvularization occurs, the Romance languages do not allow the coronal trill to appear in any context, while the Germanic languages do. One possible explanation for this distinction is that the markedness of the apically trilled [r] is great enough to motivate change in the Romance languages only. For this reason, Romance languages eliminate all coronal trills in favor of a dorsal phoneme. By contrast the Germanic languages that have uvularization, have some varieties that allow the apically trilled [r] to remain. This allophony is an indication that the apical trill is not *always* marked in the fashion of the Romance languages, but rather can still be harmonious to the languages’ grammar. A possible reason for this difference is that the apically trilled [r] is not marked in Germanic languages at all, rather the switch from coronal to dorsal place of articulation reflects an extra-linguistic motivation, namely prestige, for its employment.

Further supporting this argument is the lack of coherence among the dialects that use a uvular [ʀ] allophonically with the coronal trill. In Swedish it depends on preceding vowel

length, in Pennsylvania German it depends if the following sound is a consonant, in Bavarian German it depends if the following sound is a [-continuant], [CORONAL] consonant.

6 Summary and Prospectus

In this article, I have argued that the apically trilled rhotic is a cross-linguistically marked sound. Thus, dorsalization of a coronal rhotic is a more common sound change than the development of a coronal rhotic from a posterior one. I argued that this disparity exists because dorsalization of a coronal trill is a possible repair strategy to lessen the markedness of a language's sound system. By contrast, markedness would be elevated if coronalization of a dorsal trill were to occur.

I argued that Germanic /r/ had a coronal place of articulation. The strongest evidence supporting this claim is that Old Norse /r/ (from Germanic */r/) patterns in the Nordic breaking process with other coronal sounds. This is unlike the Old English breaking data, for which no phonological formalism yet exists that can describe the process. I have adopted Howell's (1991) position that previous phonological explanations of Old English breaking have not been successful. Nevertheless, place of articulation of the original Germanic rhotic may be deduced as a coronal sound given the cross-linguistic obscurity of a dorsal rhotic that acquires a coronal place of articulation. The highly improbable change from [R] to [r] must be reconciled for any argument that posits a dorsal rhotic in a particular Germanic daughter language. The reason why coronalization must be accounted for is because coronal rhotics are known to have predominated all the Germanic languages until fairly recent and documented history. Any dorsal rhotic in the history of a given Germanic language would have to have coronalized prior to the 1600s.

I argued that the coronal trill existed harmoniously in the phonology of Germanic languages and that this phonological system starkly contrasts the phonological constitution of Romance languages in which apically trilled [r] is marked. Evidence for this claim comes from the observation that, in the Romance languages that undergo uvularization, all instances of the apically trilled rhotic are replaced with the dorsal phoneme. That is, Romance languages that dorsalize, do so compulsorily. By contrast, some dialects of Germanic languages have developed allophony between a coronal and dorsal trill. I argued that this allophony evidences that the apically trilled [r] is less marked in Germanic languages than Romance languages. Otherwise, the complete replacement of the phoneme would be obligatory.

Finally, I concluded that the reason why Germanic languages have the dorsal rhotic at all is because of prestige borrowing from French. While most dialects of German uvularize all of the apically trilled rhotics, the dialects at the periphery of this prestige borrowing show mutations to the pattern of dorsalization. These changes are predicted by Labov's (2007) explanation of diffusion; because adults are most responsible for the geographic diffusion of a linguistic feature, their imperfections as language learners engender the linguistic mutations as the feature spreads from its source.

Future research on this topic is necessary in several areas. First, more work must be done regarding the universals of rhotics. The starting point for this research must involve a complete categorization of rhotic sounds with strict, detailed definitions of the different rhotic types. Subsequently, it will be the task to place those sounds along a markedness continuum. I submit that one of the reasons why we presently have such little understanding of rhotic phenomena is because we understand even less about the relative markedness of these sounds. This article has only made the claim that [r] is more marked than other rhotics. However, there are many more types of r-sounds to consider. The large stock of rhotic sounds that are found in Romance

languages might suggest that, besides dorsalization, alternative repair strategies to the markedness of [r] do exist. Yet, without a working knowledge of the markedness continuum of rhotics, this can not presently be determined.

Of particular concern to this article is that our present knowledge of the trilled coronal rhotic might be largely obscured by inadequate descriptions; Hammond (2000) points out that in E2, a trilled coronal rhotic is very unlikely across Spanish dialects. If it were the case that trills in other environments were similarly reduced, it might follow that uvularization took place only in those dialects where strong trills were consistently in use. This scenario could also account for the French data, if the northern dialects traditionally had a stronger apical trill, while the southern dialects tended to reduce the [r] to a flap, whereby only the northern dialects violated markedness and uvularized.

Future research will also need to examine manner of articulation. For simplicity, I have not taken frication into account. However, the role of frication in rhotics is not only of clear relevance to this topic, but to the rhotic diachrony of Indo-European languages in general. Finally, better documentation and complete descriptions of dorsalization in Romance languages is crucial. Too often descriptions of rhotic dorsalization are limited to two or three sentences. This is especially the case for Italian. With future work in these areas, we can begin to demystify some of the unusual characteristics of rhotics that so commonly become revealed in their historical developments.

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