

Sound change, paradigmatic relations, and analogy produce suppletion in Catalan verbs

Matthew L. Juge*

Abstract: The development of stem-final /g/ in several parts of Catalan verb paradigms via sound change and analogy has created suppletion in a large number of verbs. In this paper I present evidence against viewing these developments as teleological or driven by factors of markedness or naturalness. I also argue that appeal to morphemes must be tempered by the recognition of the highly variable nature of the patterns displayed by the verbs in question and contextualized in mechanisms that do not merely model change but explain how speakers create change.

Keywords: analogy; morphological change; morpheme; suppletion; sound change

1. Introduction. Diachronic research has not paid adequate attention to analogy as a source of suppletion, despite some recent discussion (Juge 1999, 2013, 2019). Previous studies have also failed to recognize the role of ‘local’ change (as described by Joseph 1992). In this paper I examine interactions among sound change, analogy, and the development of suppletion in Catalan verbs in support of the claim that analogical changes of this type are not teleological but rather the undirected result of patterns of lexical storage and formal associations. I first examine several suppletive patterns illustrated by certain Modern Catalan First Person Singular verb forms, including alternative analyses of the type of irregularity that these forms display (§2). I address variation in the modern language (§3) before examining the development of Present-tense forms (§4), distinguishing between possible regular sound change and analogical developments. I treat the factors involved in the spread of non-Present velars, including sound change, analogy, and frequency, and the subpatterns these verbs display (§5). §6 discusses leveling. In §7 I contextualize the Catalan developments cross-linguistically, addressing broader issues of explanatory power, including the role of analogy, regularization, naturalness and markedness, and morphemes. Finally, I offer a brief conclusion in (§8).

2. Non-etymological velars in Romance. A number of Romance languages have verbs with non-etymological velars (some stops, some fricatives, depending on the variety and the phonological context), primarily in the Present Subjunctive (and related Imperative forms) and the First Person Singular of the present Indicative. Well known examples include Spanish *tengo* ‘I have’ (infinitive *tener*) and Italian *vengo* ‘I come’ (infinitive *venire*). The distribution of these forms across the branches of Romance shows that these instances of weak suppletion are not shared innovations. For example, Portuguese, which, like Spanish, is an Ibero-Romance language, has the expected palatal nasal in its corresponding forms: *tenho* < Latin *teneō*, *venho* < *veniō* (<nh> represents /ɲ/). My focus in this paper is on Catalan, where such velars have spread analogically not only to a large number of verbs but also to other parts of their paradigms. Pérez Saldanya (1998) and Wheeler (2011) both provide extensive information about the philological background for the analysis of the changes in question. My emphasis here is on clarifying certain key developments and putting these changes into the broad context of mechanisms of morphological change.

* This paper benefited from input from a number of colleagues. I alone am responsible for any shortcomings it may have. Author: Matthew L. Juge, Texas State University (mj13@txstate.edu).

3. Variation in the Catalan 1s present indicative. As a result of a number of phonological and analogical changes, Catalan verbs feature stem-final velars not found in other Romance languages (except to a lesser degree in the closely related Occitan). Among them is the final /g/ in the First Person Singular in the Present Indicative, as in *estic* ‘‘I am’’ (infinitive *estar*), which surfaces as [k] with coda obstruent devoicing. This voiceless velar stop is one of several markers of 1S in the Present Indicative, some restricted to particular dialects. Another of these variants, the zero marking, has prompted extensive discussion in the literature on the history of the language (see P  rez Saldanya 1998: Ch. 8 for an overview).

Recent work on this phenomenon has focused primarily on synchronic questions, such as relationships among morphological elements (e.g., P  rez Saldanya & Vall  s 2005, Viaplana 2005), or on Catalan as a point of comparison with Spanish (e.g., Fondow 2010). In this section I present the variants and outline the historical questions they pose with special attention to their relation to suppletion.

In Standard Catalan, most verbs have final [u] (-o) in the 1s Present Indicative, while other varieties have either zero (Balearic, Alguerese) or a front vowel (-e in Valencian, -i in the Eastern Pyrenees). In Eastern Catalan, there is variation among [u], [uk], and [ut] (Table 1). A smaller number of verbs show a palatal affricate (-ig [tʃ]) or a velar stop (-c [k]¹) (Table 2). It is verbs of the latter type that are my primary focus. In this paper I focus on standard Catalan, using data from other varieties to illustrate particular points. For coverage of dialectal variation in Catalan, see Veny (1998).

Barcelona (standard)	E. Pyrenees	Eastern	Alguerese/Balearic	Valencian
canto	canti/c��ntic	cantu/c��ntuc/c��ntut	cant	cante

Table 1. Dialect variation in 1S Present Indicative of *cantar* ‘‘sing’’ (Alcover & Moll 1985)

INF	dur	dir	estar	poder	creure	(��s)ser	vendre	venir	viure	veure	anar
1S PRES IND	duc	dic	estic	puc	crec	s��c	venc	vinc	visc	veig	vaig
gloss	carry	say	be	be able	think	be	sell	come	live	see	go

Table 2. Velar and palatal endings in 1S Present Indicative in Catalan verbs (note that forms in yellow are the result of sound change)

A brief comparison with Spanish velar verbs will illustrate the complexities of the Catalan data. In the overwhelming majority of Spanish verbs, the stem of the First Person Singular in the Present Indicative is the same as the Present Subjunctive stem (the exceptions are so-called stem-changing verbs that feature diphthongs in rhizotonic forms of both the Present Indicative and Present Subjunctive and a small number of irregular verbs like *haber* ‘exist’, *ir* ‘go’, *saber* ‘know’, *ser* ‘be’). Table 3 shows this pattern not only in several velar-final stems but also in *caber* ‘to fit’.

gloss	fit	say	make	fall
INF	ka'b-e-r	de's-i-r	a-'s-e-r	ka-'e-r
2S PRES IND	'kab-e-s	'dis-e-s	'as-e-s	'ka-e-s
1S PRES IND	'kep-o	'dig-o	'ag-o	'kajg-o
2S SUBJ IND	'kep-a-s	'dig-a-s	'ag-a-s	'kajg-a-s

Table 3. Velars in the 1s Present Indicative and the Present Subjunctive of Spanish verbs

¹ When the stem ends in a nasal, the nasal is velar and the stop is often not pronounced.

In contrast, the morphological status of final velars in Catalan verbs is potentially ambiguous. While most verbs in standard Catalan have *-o* [u] in the First Person Singular Present Indicative (e.g., *sortir* : *surto* ‘I leave’), the velar-final verbs do not (e.g. *dir* : *dic* ‘I say’). Analysis of some such paradigms suggests that the marker of First Person Singular in these verbs is the /g/ itself, as illustrated in Table 4.

	<i>dir</i> “to say”	<i>sortir</i> “to leave”	<i>estar</i> “to be”
1S	dic /di-g/	sorto /surt-Ø-o/	estic /es't-ig/
2S	dius /di-ws/	surts /surt-Ø-s/	est-às /es't-a-s/
3S	diu /di-w/	surt /surt-Ø-Ø/	est-à /es't-a/

Table 4. Singular forms of *dir* ‘to say’ and *sortir* ‘to leave’ in the Present Indicative

Note, however, that *estar* invites competing analyses, namely that /-g/ is the 1S PRES IND marker (with /-i-/ serving as an irregular theme vowel) or that the sequence /-ig/ marks 1S PRES IND.

Consideration of other parts of the verb, however, such as the Subjunctive, Preterit, and the Past Participle, indicates that the /g/ belongs to the stem. Such an analysis of these forms would point to a rather unusual dual function of /g/ as an inflectional marker and part of a stem elsewhere in a given verb.

Table 5 provides some of the most common examples and the corresponding Spanish forms, most of which do not have velars.

	Catalan				Spanish				gloss
	PRES IND		SUBJ		PRES IND		SUBJ		
	1S	2S	1S PRES	1S PAST	1S	2S	1S PRES	1S PAST	
<i>dur</i>	duc	du(u)s	dugui	dugués	-duzco	-duces	-duzca	-dujese	carry
<i>dir</i>	dic	dius	digui	digués	digo	dices	diga	dijese	say
<i>estar</i>	estic	estàs	estigui	estigués	estoy	estás	esté	estuviese	be
<i>poder</i>	puc	pots	pugui	pogués	puedo	puedes	pueda	pudiese	be able
<i>creure</i>	crec	creus	cregui	cregués	creo	crees	crea	creyese	think
(és)ser	sóc	ets	sigui	fos	soy	eres	sea	fuese	be

Table 5. Selected forms with velar suppletion in Catalan and their Spanish equivalents

4. The development of velar-final 1S Present Indicative forms. There are two sources of velar-final 1S present indicative forms in Catalan: regular sound change and analogy.

4.1. SOUND CHANGE. Catalan shares with Occitan (cf. Paden 1998: 114) a sound change in which all final vowels other than /a/ were lost. This loss naturally affected reflexes of Latin *-ō* in 1S Present Indicative forms, resulting in a situation very different from that of Spanish or Italian, for instance, with a large number of verbs thus having consonant-final 1S forms in the Present Indicative. Most verbs were left with a zero marker for First Person Singular, with syncretism in the 1S and 3S forms of *-er*, *-re*, and *-ir* verbs (e.g., *dormir* “sleep”: *dorm*). The *-o* characteristic of standard Catalan in 1S Present Indicative forms began to reappear in the middle of the 16th century (Gulsoy 1993: 421).

Verbs with velar-final stems, however, present a complication. In all conjugations other than *-ar*, the Present Indicative endings had front vowels, and these often palatalized the stem-final consonant, ultimately leading to paradigms like that of *dir* “say” < Latin *dicere* (Table 6).

	Latin	Catalan
1S	dīcō	dic /dik/
2S	dīcis	dius /diws/
3S	dīcit	diu /diw/
1P	dīcimus	diem /di'em/
2P	dīcitis	dieu /di'ew/
3P	dīcunt ²	diuen /'diwən/

Table 6. Present Active Indicative forms of SAY in Latin and Catalan

The sequence of changes in these paradigms has led to forms that favor viewing *di-* as the Present Indicative stem, with the stressed endings *-em* and *-eu* considered as the 1P and 2P markers, respectively. However, if we assume that *dir* has the same endings as a regular verb like *batre* “beat” (Table 7) then the *-u-* /*w*/ of the 2S, 3S, and 3P forms seems to be part of the stem. Thus the Present Indicative would have three stem variants: /dik-/, /diw-/, and /di-/. Both the 1S and 3S would lack overt inflectional endings, but would use different stem allomorphs.

	indicative		subjunctive		indicative		subjunctive	
1S	bato	/'batu/ ³	bati	/'bati/	rebo	/'rɛbu/	rebi	/'rɛbi/
2S	bats	/'bats/	batis	/'batis/	reps	/'rɛps/	rebis	/'rɛbis/
3S	bat	/'bat/	bati	/'bati/	rep	/'rɛp/	rebi	/'rɛbi/
1P	batem	/'bətɛm/	batem	/'bətɛm/	rebem	/'rɛ'bɛm/	rebem	/'rɛ'bɛm/
2P	bateu	/'bətɛw/	bateu	/'bətɛw/	rebeu	/'rɛ'bɛw/	meteu	/'rɛ'bɛw/
3P	baten	/'batən/	batin	/'batin/	reben	/'rɛbən/	rebin	/'rɛbin/

Table 7. Present forms of Catalan *batre* “beat” and *rebre* “receive”

The forms of *rebre* “receive” show the same pattern, with one twist, namely the voiceless [p] in the 2S and 3S, which reflects a general pattern of obstruent devoicing in codas. In this sense, the /g/ of the Present Subjunctive of the *dir* (Table 8) is not surprising, except that the front vowel of the Subjunctive endings might lead us to expect consequences of palatalization (see §6.2 for further discussion).

	Latin	Catalan
1S	dīcam	digui /'digi/
2S	dīcas	diguis /'digis/
3S	dīcat	digui /'digi/
1P	dīcāmus	diguem /di'gɛm/
2P	dīcātis	digueu /di'gɛw/
3P	dīcant	diguin /'digin/

Table 8. Present Subjunctive of Latin and Catalan verbs meaning SAY

While the modern standard has generalized the *-o* for most verbs, including nearly all *-ar* verbs, some of these so-called 1st conjugation verbs show [k]-final forms. This is to be expected in dialects with *-Ø* in the 1S, like Balearic and Alguerese, as well as in the older language. In these varieties the 1S Present Indicative of *pregar* “pray”, for example, is *prec*, again reflecting

² This form must have been replaced with a form featuring the so-called thematic vowel (/i/ or /e/, depending on the exact chronology), as evidenced also by Spanish *dicen* vs. **digon* (contrast Italian *dicono*).

³ I represent the final vowel as /u/ since synchronically there is no clear evidence to suggest that the [u] of such forms is a reduced /o/, though historically that it is true.

coda obstruent devoicing, which was found as far back as Old Catalan (cf. the Old Catalan spelling *fret* for Modern Catalan *fred* [fɾɛt] ~ *freda* [frɛðə] “cold, M ~ F”). From a synchronic perspective, the element in question is best represented as /g/, even though in some cases its antecedent is Latin /k/.

The final velar spread to a number of other verbs, many of which previously had no velar component at all (Table 9; see Table 11 for the types mentioned in the left column). This suggests that it was perceived as a person/number marker. In the spirit of Joseph (1997), it bears mentioning that the linguist’s tendency to segment forms may not match how speakers view(ed) them, and indeed it is possible that the /g/ was seen as both an inflectional ending and part of the stem.

type	gloss	INF	Indicative		Subjunctive		Past Participle
			1S PRES	1P PRES	1S PRES	1S PAST	F S
A	know	saber	sé	sabem	sàpiga ⁴	sabés	sabuda
B/C	write	escriure	escric	escrivim	escrigui	escrivís/escrigués	escrita
C	say	dir	dic	diem	digui	digués	dita
C	carry	dur	duc	duem	dugui	dugués	duta
D	be worth	valer	valc	valem	valgui	valgués	valguda
D	drink	beure	bec	bevem	begui	begués	beguda
D	believe	creure	crec	creiem	cregui	cregués	creguda
D	please	plaure	plac	plaem	plagui	plagués	plaguda
E	live	viure	visc	vivim	visqui	visqués ⁵	viscuda
F	fall	caure	caic	caiem	caigui	caigués	caiguda
G	be	estar	estic	estem	estigui	estigués	estada
H	want	voler	vull [bwi]	volem	vulgui	volgués	volguda
I	be able	poder	puc	podem	pugui	pogués	poguda
I	come	venir	vinc	venim	vingui	vingués	vinguda
J	know	conèixer	conec	coneixem	conegui	conegués	coneguda
K	be	ésser/ser	sóc	som	sigui	fos	estada/siguda
L	have AUX	haver	he/haig	havem/hem	hagi	hagués	haguda

Table 9. Presence and source of stem-final velars in Catalan verbs (Note that forms that may have etymological stem-final velars are in bold. Variation is indicated with slashes.)

4.2. REASONS FOR CHANGE. Duarte & Alsina suggest that the introduction of /g/ into 1s Present forms of *venir* “come” and *tenir* “have” may have been “in order to avoid the rather unusual [n ~ ɲ] alternation that was produced in their roots”⁶ (1986: 194). This teleological explanation is consistent with arguments put forth by Pérez Saldanya (1998) about these developments (and other changes as well), which are discussed below (§7).

5. Development of velars in the other parts of the paradigm. Although the spread of velars to the 1s Present Indicative and Present Subjunctive is more extensive in Catalan than in other Romance languages, these verbs are in this respect broadly similar to those in other languages with regard to the Present Indicative and Present Subjunctive. In Catalan, however, the velars

⁴ The otherwise mostly regular verb *cabre* “fit” (the other point of irregularity is the lack of -e- in the future and conditional — e.g., *cabrà* “it will fit” — a trait common to a fair number of other verbs) shares the unusual Present Subjunctive pattern of *saber*. The corresponding verbs in Ibero-Romance share a different unique Present Subjunctive pattern as a result of the interaction of the yod and their stem shapes: Spanish *saber*, 1s Present Subjunctive *sepa*, *caber* 1s Present Subjunctive *quepa*.

⁵ This may reflect metathesis of the Latin stem *vīx-* /*wi:ks-*/ (cf. Coromines 1971: 323-324).

⁶ All translations are mine.

have spread to other parts of the paradigm not typically showing velars in other Romance languages. Depending on the verb, non-etymological stem-final velars can be found in one or more of the Preterit, Past Subjunctive, and Past Participle (Table 7).

5.1. SOUND CHANGE. As we saw in §4 (cf. especially Tables 6 and 8), some 1S Present Indicative stem-final velars are non-analogical, that is etymological, as in 1S Present Indicative and The Present Subjunctive of *dir* “say”. It is also commonly claimed that some instances of non-present stem-final /g/ also result from sound change. In cases where the final velar appears in the Preterit, the /g/ is the result of regular sound change. Meyer-Lübke (1895: §283) proposed a sound change of [w] > [g^w] > [g] that would account for these cases, e.g., Latin (present) Perfect *habuit* > Old Catalan *hac* “had” (3S Preterit of *haver* with loss of *-b-*, loss of non-low vowels, and final devoicing). A slightly more complicated case of a Preterit with a final /g/ is that of *poder* “be able”, where earlier Catalan appears to match the sequence presented by Paden for Old Occitan: 3S Preterit *poc* < *potuit* via cluster simplification (1998: 50). As Wheeler points out (2011: 196), scholars have mostly followed Meyer-Lübke’s proposal.

5.2. REGULARIZATION OF ‘STRONG’ PRETERITS. A number of Old Catalan verbs had so-called strong preterits, i.e., preterits with stress on their stems, typically with zero marking in the 1S and 3S, and usually at least weakly suppletive. Table 10 shows some of these, along with a verb with a ‘weak’ preterit — with stress on the inflections and usually not suppletive — and the modern forms. These analogical changes to the Preterit introduced /g/ where it had been completely absent (e.g., *dir*) and extended it in others (e.g., *haver*). Pérez Saldanya attributes the analogical changes to “the serious problems of morphological naturalness of the Old Catalan forms” (1998: 219). He approaches these changes in terms of optimization: “It is unquestionable that an analogical generalization of the velar consonant to both roots in all the verbs had a quality that clearly optimized the system” (1998: 77).

	Latin			Old Catalan			Modern Catalan		
	weak		strong	weak	strong			weak	
INF	*andāre	dīcere	habēre	anar	dir	haver	anar	dir	haver
gloss	go	say	have	go	say	have	go	say	have
1S	*andāvī	dīxī	habuī	ané	dix	hac	aní	diguí	haguí
2S	*andāvistī	dīxistī	habuistī	anast	dixist	haguist	anares	digueres	hagueres
3S	*andāvit	dīxit	habuit	anà	dix	hac	anà	digué	hagué
1P	*andāvimus	dīximus	habuimus	anam	dixem	haguem	anàrem	diguérem	haguérem
2P	*andāvistis	dīxistis	habuistis	anats	dixets	haguets	anàreu	diguéreu	haguéreu
3P	*andāverunt	dīxerunt	habuerunt	anaren	dixeren	hagren	anaren	digueren	hagueren

Table 10. Catalan ‘strong’ and ‘weak’ preterits and their Latin etyma (Note that <x> represents /ks/ in Latin and /ʃ/ in Catalan.)

Wheeler (2011: 198), however, rejects the majority view proposed by Meyer-Lübke (1895) in claiming that these stem-final velars result from sound change. Instead, he aligns himself with Körting (1898) and Ronjat (1937), who argue that the phonological details do not support Meyer-Lübke’s (1895) proposed sound change. Wheeler argues that the forms with stem-final velars constitute a morpheme (in the sense of Aronoff (1994) and developed in extensive research in Romance by Maiden (e.g., 2013)) and that early texts show the “force of attraction of the velar morpheme” (2011: 194).

It is worth noting that Catalan has vowel reduction whereby mid back vowels contrast with each other and with /u/ in stressed syllables but not in unstressed syllables. Thus *pugui* and *pogués* and both have [u] in the first syllable (in the standard variety, where the front mid vowels and /a/ surface as [ə], as in *creguda* and *plaguda*; the vowel reduction patterns vary by dialect).

These verbs belong to several classes, varying according to nine parameters (Table 11). These include the presence of a stem-final velar in a given part of the paradigm (1s Present Indicative, Present Subjunctive, Past Subjunctive and Preterit, Past Participle), along with the possible presence of other elements (/s/ or /j/) in the velar stem. Some verbs show a vocalic mismatch between stems (e.g., the copula (*és*)*ser*, with *sóc* 1s Present Indicative, 1s Present Subjunctive /i/). Further distinctions could be drawn according to the final phoneme of the stem found in the 1P Present Indicative and other forms. Naturally some of these verbs present other irregularities, such as the 2s Present Indicative of (*és*)*ser*, *ets*; the pronunciation of *vull* “I want” as [bwi] even in the standard, where the lateral pronunciation of /ʎ/ is normally retained, including in final position, as in *ull* “eye”; and the colloquial form *poguer* for *poder*.

	type	A	B	C	D	E	F	G	H	I	J	K	L	M
stem-final velar in 1S PRES IND			√	√	√	√	√	√		√	√	√		
stem-final velar in PRES SUBJ		√	√	√	√	√	√	√	√	√	√	√		
stem-final velar in PAST SUBJ / PRET				√	√	√	√	√	√	√	√		√	
stem-final velar in PCPL					√	√	√		√	√	√	(√)	√	√
/s/ in velar stem						√								
/j/ in velar stem							√							
velar PRES IND stem V ≠ velar PRES SUBJ stem V												√		
non-velar stem V ≠ velar stem V								√	√	√				
/ʎ/ in non-velar stem											√			

Table 11. Distributional parameters in velar verbs in Catalan

Note that the Preterit and the Past Subjunctive have the same stem, except three irregulars — (*és*)*ser* “be”, *fer* “do”, and *veure* “see” — which have ‘strong’ Preterits, i.e., with stress on the stem (see Table 11).

INF	(<i>és</i>) <i>ser</i>	<i>fer</i>	<i>veure</i>
gloss	be	do	see
1S	fui	fiu	viu
2S	fores	feres	veieres
3S	fou	féu	véu
1P	fórem	férem	veiérem
2P	fóreu	féreu	veiéreu
3P	foren	feren	veieren

Table 12. The three ‘strong’ Preterits (with stress on the stem) in Modern Catalan

Perhaps the most significant conclusion to be drawn from Tables 10 and 11 is that these patterns and the changes that created them do not involve a single morpheme. An adequate morphomic approach would need to be framed in terms of a family or cluster of morphemes. Certainly these patterns contrast quite sharply with one of the clearest Romance candidates for morpheme, the identity of stems in the Preterit, The Past Subjunctive, and The Future Subjunctive in Spanish and the other Ibero-Romance languages.⁷ In these languages, even the most irregular verbs have a single stem *fue*{*r/s*}- for these disparate categories, e.g., 3P of Spanish *ser* “be”: Preterit *fueron*, Past Subjunctive *fueran/fuesen*, Future Subjunctive *fueren*.

⁷ Ibero-Romance refers to a genetic rather than a geographic grouping and thus includes Spanish, Portuguese, and Galician but excludes Catalan.

Maiden (2001) refers to this grouping as PyTA (*Perfecto y Tiempos Afines* “Perfect and Related Tenses”).

Pérez Saldanya (1998) discusses verbs of this type in several chapters. Surprisingly, though, he does not address what might be argued to be the most challenging paradigms, namely the present of the copulas (*és*)*ser* and *estar* (Table 13). Similarly, two recent synchronic articles on velar verbs (Pérez Saldanya & Vallès 2005, Viaplana 2005) omit these verbs. Wheeler, too, gives these verbs too little attention, especially in light of the fact that the vowel alternations in their Present Indicative and Present Subjunctive forms reduce the coherence of the potential velar morpheme. It may be significant that these alternations include /i/ in the Present Subjunctive, like four of the other seven most frequent velar verbs in Table 14 (*dir* “say”, *tenir* “have”, *saber* “know”, *mantenir* “maintain”).

	(és)ser PRES IND	(és)ser PRES SUBJ	(és)ser PAST SUBJ	estar PRES IND	estar PRES SUBJ	estar PAST SUBJ
1S	sóc	sigui	fos	estic	estigui	estigués
2S	ets	siguis	fossis	estàs	estiguis	estiguessis
3S	és	sigui	fos	està	estigui	estigués
1P	som	siguem	fóssim	estem	estiguem	estiguéssim
2P	sou	sigueu	fóssiu	esteu	estigueu	estiguéssiu
3P	són	siguin	fossin	estan	estiguin	estiguessin

Table 13. Stem-final velars in the Catalan copulas (*és*)*ser* and *estar*

5.3. FREQUENCY. Duarte & Alsina note that some of the verbs involved in these changes are quite frequent (1986: 196). These developments, like other cases of suppletion, present a challenge for typical views of frequency in morphological change. On the one hand, frequent forms are said to be resistant to change. On the other, frequent forms are also commonly involved in such changes. The short, and naturally simplified, perspective is that forms with high token frequency are subject to a kind of ‘accelerated’ sound change but are resistant to leveling. The Catalan data, however, involve neither accelerated sound change nor leveling (at least not primarily).

Table 14 shows approximate frequency measures for 30 verbs with stem-final velars; these are verbs that are relatively frequent or commonly mentioned as examples of such verbs. For the sake of comparison, Table 15 provides figures for 30 common verbs without stem-final velars. The tables show the frequency of the infinitive in Wiktionary’s Catalan frequency list (https://en.wiktionary.org/wiki/Wiktionary:Frequency_lists/Catalan, accessed 15 March 2022). Naturally this simple tally is only a rough guide, as it provides no information about the relative frequency of given parts of a single paradigm. Other complications include semi-auxiliary-like functions of verbs like *tornar*, used in the expression of repeated actions (e.g., *torna a ploure* [return-3S.PRES.IND to rain-INF] “it’s raining again”) and *acabar* “to finish”, which also is used in an immediate past construction (e.g., *acaba de sortir* [finish-3S.PRES.IND to leave-INF] “she just left”).

type	Infinitive	gloss	#	type	Infinitive	gloss	#
K	ésser/ser	be	858/39485	J	aparèixer	appear	789
I	poder [‡]	be able	6133	C	compondre	compose	493
I	tenir	have	5307	H	voler	want	482
C	dir	say	3150	A	saber	know	435
I	obtenir	obtain	2822	M	pertànyer	belong	435
G	estar	be	2502	C/D	vendre	sell	425
M	néixer/nàixer	be born	2244/240	C/D	coure	cook	377
I	mantenir	maintain	1726	C/G	treure	take out	303
C	p(r)endre*	take	1632	C	confondre	mistake	220
B/C	escriure	write	1508	I	venir	come	202
E	viure	live	1310	D	moure	move	183
C	dur	carry	1122	D	creure	think	160
C	romandre	stay	944	C	dependre	depend	146
J	conèixer	know	848	D	valer	be worth	109
F	caure	fall	795	D	deure	owe	104

Table 14. Selected verbs with stem-final /g/.

[‡]Colloquially *poguer*

*This infinitive displays variability in the presence or absence of the first rhotic, both in writing and pronunciation, that appears to be unrelated to the velar segments under discussion here.

Infinitive	gloss	#	Infinitive	gloss	#
fer	do	9455	crear	create	2065
arribar	arrive	4487	guanyar	win	2007
partir	leave	4215	acabar	finish	2006
començar	begin	3640	establir	establish	1900
morir	die	3614	deixar	leave, stop	1841
passar	pass, happen	3485	ocupar	occupy	1825
donar	give	3361	construir	construct	1820
aconseguir	achieve	3120	estudiar	study	1789
rebre	receive	2974	servir	serve	1787
tornar	return, do again	2939	entrar	enter	1640
formar	form	2828	quedar	stay	1599
anar	go	2541	convertir	convert	1589
trobar	find	2363	realitzar	carry out	1447
participar	participate	2233	produir	produce	1447
veure	see	2190	esdevenir	happen	1412

Table 15. Thirty common standard Catalan verbs without stem-final /g/ alternations

6. Leveling in the Present Subjunctive. This section briefly presents analogical changes that increase the opacity of the sequence of events surrounding stem-final velars for the analyst of the modern language.

6.1. FIRST CONJUGATION (-AR) VERBS. In Latin, The Present Subjunctive was marked by *-e-* in first conjugation verbs, i.e., those whose Active Infinitives ended in *-āre*, e.g. *amem* 1s Present Subjunctive of *amāre* “love”. These endings should lead to stem alternations in some verbs in various Romance languages, with velars in the Present Indicative (and elsewhere) and palatalized

consonants (or related developments) in the Present Subjunctive. The modern languages, however, have tended to level such alternations. Thus, in verbs like Catalan *pregar*, the voiced intervocalic /g/⁸ now appears in all forms, including the Present Subjunctive. Similarly, without this leveling, the 1s/3s Present Subjunctive of *pagar* “pay” would be expected to be *pau*, just like the noun for “peace” < Latin *pācem*, which underwent a sequence that can be abbreviated as in (1) (cf. Duarte & Alsina 1986: 250):

- (1) k > ts / ___ V_[front]
 ts > w / ___ V_[front]
 V_[-low] > Ø / ___ #

6.2. SPREAD OF FRONT-VOWEL SUBJUNCTIVE ENDINGS TO OTHER CONJUGATIONS. Nadal & Prats (1993: 418) note that the Catalan of the late 14th and early 15th centuries still showed the expected *-a-* in the Present Subjunctive of verbs not belonging to the *-ar* group (cf. Spanish and Portuguese). The later change to *-i-* occurred after front vowels had ceased to palatalize velars.

7. Explanatory value. In this section I briefly examine some issues regarding the explanatory power of two of the approaches discussed above, those of Pérez Saldanya (1998) and Wheeler (2011). First, I will address some of the key issues surrounding the relationship between analogy and regularization.

7.1. ANALOGY ≠ REGULARIZATION. Perhaps the most important question surrounding these developments is not whether analogy is involved — since that seems beyond doubt — but rather what kind of analogical processes play a role. Consider, for instance, Aski’s (1995) study of templates in the development of verbs meaning GO in French, Spanish, and Italian. Her account has been accepted by, among others, Corbett (2007), Veselinova (2006), Maiden (2005), and Hippisley et al. (2004), but Juge (2013) shows that the data do not support her claim that changes affecting verbal alternations are “consistently to more productive templates” (1995: 403). Instead, the data is much more consistent with the view of Joseph (1992, 1997), who sees such changes as a reflection of a ‘local’ approach that may not match the system-wide generalizations that linguists seek to identify.

Though the literature on teleology in morphological change is far too extensive for review here, it bears mentioning that the Catalan data do not support teleological claims like those of Duarte & Alsina (1986) and Pérez Saldanya (1998). Likewise for claims regarding simplificatory tendencies (Duarte & Alsina 1986: 195-196). See Juge (2007) for discussion.

It is undoubtedly true that analogical changes, including proportional analogy and leveling, often produce paradigms that can be considered more regular than their predecessors (cf. Hock 2003). For example, the proportional analogy whereby the past tense form *holp* was replaced by *helped* (*walk:walked::help:X, X=helped*) yielded a regular verb, comparable in its paradigm to many others. Likewise, the leveling that must have affected the Present Subjunctive of *-ar* verbs in various Romance languages, thus eliminating alternations like the /g/ ~ /w/ alternation that would be expected in Catalan *pagar* “pay” (see §6.2).

It is clear, however, that analogical changes do not always produce regular forms. For example, in the Fisterran dialect of Galician, one variant of the Imperfect Indicative of *ir* “go” shows weak suppletion as a result of analogy with the semantically related verb *vir* “come”

⁸ In Catalan, as in Spanish and Basque, non-final voiced stops /b d g/ surface as voiced fricatives [β ð ɣ] or the corresponding approximants after vowels or liquids (except /d/ after /l/).

(RAG 2005). Juge (2013) lays out the set of sound changes and the analogy that led to forms with a stem-final /ɲ/ (e.g., *iña* “I went”). English also provides examples of analogical change that result in irregular paradigms. As Juge points out (2013: 181), the creation of *brang* and *brung* as simple Past and Past Participle of *bring* ‘moves’ the verb into a subclass (cf. *ring* ~ *rang* ~ *rung*), but the creation of *dove* as a past of *dive* on the model of verbs like *drive* yields a paradigm that is not only irregular but that also matches no other verb (*dive* ~ *dove* ~ *dived*, not **diven*). Similarly, the replacement of *sneaked* by *snuck* has produced a unique paradigm. Maschi (2007) also discusses the development of classes by analogy.

Maiden (1992) has also illustrated the spread of irregularity via analogy. These examples suggest that speakers do not notice some — or possibly many — of the patterns that linguists pay attention to. As Joseph explains, such local changes suggest that speakers “often act as if they were in a fog, by which is meant not that they are befuddled but that they see clearly only immediately around them, so to speak, and only in a clouded manner farther afield” (1992:140).

7.2. OPTIMIZATION AND NATURALNESS. Pérez Saldanya (1998) frequently presents morphological changes in terms of naturalness and optimization. He also discusses such changes as ways of resolving ‘problems’. It is not surprising, then, that he often couches his explanations in Natural Morphology (see, among others, Dressler et al. 1987). For example, he states that the weak Preterits of Old Catalan display “an entire series of anomalies, which are the cause of the important analogical changes that the category experienced towards the end of the Middle Ages” (1998: 224). He identifies four “problems”: lack of uniformity, “fusion” of morphosyntactic categories, morphological opacity, and syllabic imbalance (1998: 224-226). The patterns he addresses are broadly similar to those found in other languages that have not been ‘repaired’ by change.

In keeping with the practice of Natural Morphology, Pérez Saldanya also distinguishes between ‘marked’ and ‘unmarked’ traits, stating that different outcomes with velar stems can be attributed to the “marked or unmarked character” of the various categories (1998: 86, also 20, 79, 151, 152, 156, 229, 285). Haspelmath, however, argues convincingly “that the term ‘markedness’ is superfluous, because some of the concepts that it denotes are not helpful, and others are better expressed by more straightforward, less ambiguous terms” (2006: 25).

7.3. MORPHOMES AND EXPLANATION. Wheeler does not clearly distinguish between identifying a morpheme and explaining a change or set of changes. In a sense, in diachronic analysis, the morpheme is itself an explanandum as well, not necessarily an explanans. If further research, perhaps of a psycholinguistic nature, shows that the presence of a morpheme can affect subsequent changes, that could be added to the factors involved in language change, but the development of the morpheme would nonetheless remain one of the items to be explained in a comprehensive treatment.

8. Conclusions. The spread of stem-final velars in Catalan is the result of a combination of sound changes and a series of analogical changes that have created a variety of instances of weak suppletion. While Wheeler argues that the distribution of these elements is morphomic, the verbs in question display a variety of patterns and thus cannot represent a single morpheme. Even if they did, claiming that the forms constitute a morpheme would not adequately explain the developments. These changes reflect the kind of ‘local’ changes described by Joseph (1992, 1997) and remind us of the need to explain language change in terms of its implementation by language users.

Abbreviations

1	First Person	F	Feminine	PCPL	Past Participle	S	Singular
2	Second Person	IND	Indicative	PRES	Present	SUBJ	Subjunctive
3	Third Person	P	Plural	PRET	Preterit		

References

- Alcover, A. M. & F. de B. Moll. 1985. *Diccionari català-valencià-balear*. Palma de Mallorca, ES: Editorial Moll. <http://dcvb.iec.cat/>.
- Aronoff, Mark. 1994. *Morphology by itself: Stems and inflectional classes*. Cambridge, MA: MIT Press.
- Aski, Janice M. 1995. Verbal suppletion: An analysis of Italian, French, and Spanish ‘to go’. *Linguistics* 33.403–432. <https://doi.org/10.1515/ling.1995.33.3.403>.
- Corbett, Greville G. 2007. Canonical typology, suppletion, and possible words. *Language* 83(1). 8–42. <https://doi.org/10.1353/lan.2007.0006>.
- Coromines, Joan. 1971. *Lleures i converses d'un filòleg*. Barcelona: Club Editor.
- Dressler, Wolfgang, Willi Mayerthaler, Oswald Panagl & Wolfgang Wurzel (eds.). 1987. *Leitmotifs in Natural Morphology*. Amsterdam: John Benjamins.
- Duarte i Montserrat, Carles & Àlex Alsina i Keith. 1986. *Gramàtica històrica del català*, vol. II. Barcelona: Curial Edicions Catalanes.
- Fondow, Steven Richard. 2010. *Spanish velar-insertion and analogy*. Columbus, OH: The University of Ohio State dissertation.
- Gulsoy, Joseph. 1993. *Estudis de gramàtica històrica*. Valencia: Institut Universitari de Filologia Valenciana.
- Haspelmath, Martin. 2006. Against markedness (and what to replace it with). *Journal of Linguistics* 42(1). 25–70. <https://doi.org/10.1017/S0022226705003683>.
- Hippisley, Andrew, Marina Chumakina, Greville Corbett & Dunstan Brown. 2004. Suppletion: Frequency, categories and distribution of stems. *Studies in Language* 28(2). 387–418.
- Hock, Hans Heinrich. 2003. Analogical change. In Richard Janda & Brian D. Joseph (eds.), *Handbook of historical linguistics*, 441–460. Malden, MA: Blackwell.
- Joseph, Brian D. 1992. Diachronic explanation: Putting speakers back into the picture. In Garry W. Davis & Gregory K. Iverson (eds.), *Explanation in historical linguistics*, 123–144. Amsterdam: John Benjamins.
- Joseph, Brian D. 1997. How general are our generalizations? What speakers actually know and what they actually do. In Anthony D. Green & Virginia Motopanyane. *ESCOL '96. Proceedings of the Thirteenth Eastern States Conference on Linguistics*, 148-160. Ithaca: Cascadilla Press.
- Juge, Matthew L. 1999. On the rise of suppletion in verbal paradigms. *Berkeley Linguistics Society (BLS)* 25. 183–194. <https://doi.org/10.3765/bls.v25i1.1195>.
- Juge, Matthew L. 2007. Metaphor and teleology do not drive grammaticalization. In Joseph C. Salmons & Shannon Dubenion-Smith (eds.), *Historical Linguistics 2005: Selected Papers from the 17th International Conference on Historical Linguistics, Madison, 31 July-5 August 2005*, 33–48. Amsterdam: John Benjamins.
- Juge, Matthew L. 2013. Analogy as a source of suppletion. In Ritsuko Kikusawa and Lawrence A. Reid (eds.), *Selected Papers from the 20th International Conference on Historical Linguistics*, 175-197. Amsterdam: John Benjamins.

- Juge, Matthew L. 2019. The sense that suppletion makes: Towards a semantic typology on diachronic principles. *Transactions of the Philological Society*. 117(3). 390–414. <https://doi.org/10.1111/1467-968X.12175>.
- Körting, Gustav. 1898. Die starken Perfekta auf -c im Altprovenzalischen. *Zeitschrift für romanische Philologie* 22. 258–259.
- Maiden, Martin. 1992. Irregularity as a determinant of morphological change. *Journal of Linguistics* 28. 85–312. <https://doi.org/10.1017/S0022226700015231>.
- Maiden, Martin. 2001. A strange affinity: ‘Perfecto y tiempos afines’. *Bulletin of Hispanic Studies* 78. 441–464.
- Maiden, Martin. 2005. Morphological autonomy and diachrony. In Geert Booij & Jaap van Marle (eds.), *Yearbook of Morphology 2004*, 137–175. Amsterdam: Springer.
- Maiden, Martin. 2013. The Latin ‘third stem’ and its Romance descendants. *Diachronica* 30(4). 492–530. <https://doi.org/10.1075/dia.30.4.03mai>.
- Maschi, Roberta. 2007. Analogy and irregularity in Romance verbal morphology. In Geert Booij, Bernard Fradin, Angela Ralli & Sergio Scalise (eds.), *Proceedings of the Fifth Mediterranean Morphology Meeting*, 125–140. Bologna: Università degli Studi di Bologna.
- Meyer-Lübke, Wilhelm. 1895. *Grammaire des langues romanes, vol. 2, Morphologie*. Paris: Welter. [Reprinted Geneva: Slatkine/Marseille: Lafitte 1974.]
- Nadal, Josep M. & Modest Prats. 1993. *Història de la llengua catalana, vol. 1, Dels orígens fins al segle XV* (Estudis i documents 33, 4th edition). Barcelona: Edicions 62.
- Paden, William D. 1998. *An introduction to Old Occitan*. New York: MLA.
- Pérez Saldanya, Manuel. 1998. *Del llatí al català: Morfosintaxi verbal històrica*. Valencia: Universitat de València.
- Pérez Saldanya, Manuel & Teresa Vallès. 2005. Catalan morphology and low-level patterns in a network model. *Catalan Journal of Linguistics* 4. 199–223.
- Real Academia Galega (RAG). 2005. *Normas ortográficas e morfolóxicas do idioma galego*. Vigo: Instituto da Lingua Galega.
- Ronjat, Jules. 1937. *Grammaire istorique des parlers provençaux modernes, vol. 3*. Montpellier: Société des Langues Romanes. [Reprinted Geneva: Slatkine/Marseille: Lafitte 1980.]
- Veny i Clar, Joan. 1998. *Els parlars catalans: Síntesi de dialectologia* (12th edn.). Mallorca: Moll.
- Veselinova, Ljuba. 2006. *Suppletion in verb paradigms: Bits and pieces of the puzzle*. Amsterdam & Philadelphia: John Benjamins
- Viaplana, Joaquim. 2005. Velar verbs and verbal classes in Catalan. *Catalan Journal of Linguistics* 4. 225-247.
- Wheeler, Max. 2011. The evolution of a morpheme in Catalan verb inflection. In Martin Maiden, John Charles Smith, Maria Goldbach & Marc-Olivier Hinzelin (eds.), *Morphological autonomy: Perspectives from Romance inflectional morphology*, 183-209. Oxford: Oxford University Press.