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Elastic s+C and Left-moving Yod in the Evolution from Latin to French

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Abstract: Elastic s+C is the idea that s+C clusters are heterosyllabic by default in all languages, and that some repair will occur in case, pending on language-specific circumstances, a heterosyllabic parse is illegal (preceding long vowel, preceding coda, beginning of the word). The repair at hand is the branching of the s on the following empty nucleus. This generalization is derived from the behaviour of left-moving yod in the diachronic evolution from Latin to French. The floating yod (here coming from palatalization k+i,e > j+ts) anchors as a coda if the preceding syllable is open (placēre > *plaisir*), but is lost in case it is closed (cancellāre > *chanceler*), except when the syllable-final C is s (cresc(e)re > *croistre* (mod. *croître*)). We know independently that intervocalic s+C clusters are regular coda clusters: they block diphthongization (testa > *teste* (mod. *tête*)). Hence s is elastic: s+C is a regular coda cluster unless there is a demand for s to vacate its coda position. It is shown that among all syllabic identities for s+C that are entertained in the literature only one is compatible with this pattern: in CsC clusters, i.e. in absence of a preceding vowel, s branches on the following empty nucleus, i.e. the one that separates it from the following C. This is confirmed by an independent pattern: the middle consonant of CCC clusters is lost unless it is s (CsC), but is regularly dropped in sCC clusters. Here as well s+C is a regular coda-onset cluster when preceded by a vowel (sCC), but s elastically becomes a non-coda when preceded by a consonant (CsC). This empirical generalization appears to be an unprecedented finding: s in s+C is a coda when preceded by a vowel, but a (branching) non-coda when not preceded by a vowel. It is shown that it may solve a good deal of the notoriously mysterious behaviour of s+C clusters as such, i.e. in other languages and in synchronic analysis. Word-initially s+C is not followed by a vowel and therefore a non-coda, thus accounting for the typical cross-linguistic pattern whereby s+C is exceptional word-initially, but not word-internally

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(where it is followed by a vowel). Also, the branching analysis solves the mysterious fact that s only shows exceptional behaviour when it is followed by a consonant: there is no empty nucleus it could branch on when followed by a vowel.

Keywords: s+C clusters, palatalization, metathesis, CVCV phonology, evolution Latin > old French.

1 Introduction

The development from Latin to Old French offers a window on the phonological object of wonder s+C.[1] There is a massive literature on s+C because this cluster, like no other, confounds expectations that phonologists have regarding clusters or otherwise firmly established generalizations (like sonority sequencing). Vaux and Wolfe (2009) as well as Goad (2011, 2012) (among others) provide an informed overview of the empirical patterns and solutions that are found in the literature. The latter, typically motivated by word-initial s+C, essentially boil down to s being extrasyllabic or belonging to a specific constituent that exists only at word margins (the appendix), or s+C being a contour segment (i.e. occupying one single C position, like affricates) or a coda-onset sequence. These options are discussed in greater detail in Section 7.

A solution not included in this canonical list is prompted by the Strict CV framework (Lowenstamm 1996, Scheer 2004) of Government Phonology (Kaye et al. 1990) where syllabic constituent structure is a strict sequence of non-branching onsets and non-branching nuclei. Hence all consonants belong to a C position and are followed by a nucleus. In case the following segment is another consonant, this nucleus is empty. Hence all clusters that are [CC] on the surface enclose an empty nucleus /CøC/. This is also true for s+C clusters, which are thus /søC/.

The neogrammarians already concluded in the late 19th century that the first consonant of word-initial clusters which violate sonority sequencing such as #kt, #pt and #s+C must belong to a separate syllable (Sievers 1901: §534, "kleine Nebensilben", i.e. 'small secondary syllables'). This either means that the first consonant of these clusters is the onset (#søC) or the coda (#øs.C) of the extra small secondary syllable. The latter solution is Kaye's (1992) proposal, the

1 Here and henceforth s in s+C is a cover term for s-sounds that produce s+C effects: depending on the language, these include [s,ʃ,ɕ] and sometimes voiced versions thereof.

former what is predicted by Strict CV. Note that the neogrammarians believed in their theory: given the sonority sequencing generalization and the inventory of syllabic positions they had (onset, nucleus, coda, Sievers 1901: §§526–530), they applied this toolbox to the contravening clusters #kt, #pt and #s+C: if they cannot be branching onsets, their first consonant must belong to a separate syllable. This view is much unlike the one that has prevailed in much of the generative literature: rather than applying the existing theory to seemingly strange clusters, the theory was amended to accommodate them: extrasyllabicity and specific constituents (appendix) are patches that exist only because the apparently contravening clusters exist. Rather than introducing a new patch every time something unexpected occurs, sound methodology refuses to modify the existing theory unless all theory-internal possibilities have been exhausted. This is what the neogrammarians did: s in #s+C must belong to a different syllable, and hence must be preceded or followed by an (empty) nucleus.

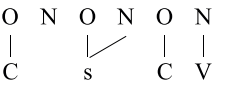
It is shown below that the solution where s+C encloses an empty nucleus (/søC/) couched in the workings of Strict CV is able to make sense of the empirical puzzle studied, i.e. left-moving yod in the evolution from Latin to (Old) French. It is also suggested that the analysis developed may extend beyond the diachronic French pattern, i.e. may be a general solution for the s+C conundrum.

The analysis of s+C that is developed here builds on Barillot and Rizzolo's (2012) suggestion that in s+C the s branches on the following empty nucleus (1b), which makes the cluster non-heterosyllabic (in Strict CV a coda consonant is one that is followed by a (governed) empty nucleus (1a), see Section 4.1). In the diachronic French pattern studied, s+C shows sometimes heterosyllabic, but at other times non-heterosyllabic behaviour. This suggests that the s of s+C does not always branch in a given language. The distribution of heterosyllabic vs non-heterosyllabic s+C found in the diachronic French pattern is as in (1): for reasons that appear in Section 7.2 it is called elastic s+C in this article.

(1) elastic s+C

a. s+C is heterosyllabic after vowels:
VsCV is /Vs.CV/

b. s+C is non-heterosyllabic after consonants: CsCV is /C.sCV/



Crucially, non-heterosyllabic s+C clusters are *not* tautosyllabic, i.e. do not represent a branching onset. A major and consensual result of the s+C literature is

precisely that s+C is never a branching onset. The syllabic identity of non-heterosyllabic s+C, then, is argued to be the structure where the s branches on the following (empty) nucleus (1b).

The s+C puzzle in fact falls into three more specific issues, shown in (2).

(2) the s+C puzzle
   a. syllabic mystery: what is the syllabic identity of s+C?
   b. the singleton mystery: given that s has a peculiar behaviour when it is involved in s+C, why is it perfectly regular when it occurs alone (i.e. before a vowel)?
   c. the segmental mystery: why is it only s and no other consonant or fricative that produces s+C effects when occurring in a cluster?

The present article has nothing to say about the segmental mystery (2c): there is nothing in the analysis that would explain why s (or ʃ,ɕ), rather than, say, f, χ, θ or k, is able to branch on the following nucleus. But it does submit a solution for the syllabic (2a) and the singleton (2b) mysteries: the answer to the former is shown in (1), and the latter follows. That is, the natural and regular syllabic identity of s+C clusters is heterosyllabic (1a). It is only when a preceding consonant (in fact empty nucleus) forces s to branch (Section 7.1) that s+C takes on a non-heterosyllabic aggregate state (1b) which causes the peculiar behaviour that puzzles phonologists. As soon as the preceding consonant (empty nucleus) is removed, s+C falls back on its regular heterosyllabic nature: this is what we call the elasticity of s+C (Section 7.3). Given these workings, the singleton mystery (2b) comes for free: when s is followed by a vowel, the nucleus to its right is filled and hence s cannot branch.

The empirical material studied below concerns two processes that occur in the evolution from Latin to Old French, Romance palatalization and metathesis. They both produce a (floating) yod (or palatal agent) that moves to the left and tries to anchor as a coda. Material and analysis are taken from the *Grande Grammaire Historique du Français* (Marchello-Nizia et al. 2020) which offers more detailed data and background.

2 Sources of left-moving Yod

In the evolution from Latin to Old French there are two sources of left-moving yod: Romance palatalization (k+i,e > j.ts) and metathesis (C.j > j.C).

2.1 Romance Palatalization

In intervocalic position, Romance palatalization affects voiceless k followed by i,e such that the velar appears as yod+ts in OFr.: placēre > *plaisir* 'pleasure', aucellu > *oisel* (mod. *oiseau* 'bird'), voce > *voiz* (mod. *voix* 'voice')[2] where the OFr. orthography <i> represents the yod produced by palatalization, which engages with the preceding vowel to form a diphthong in further evolution (aj > ai > mod. ɛ; oj > oi > wɛ > mod. wa).[3] The other component of the output of the process is ts, which undergoes intervocalic voicing in further development (see Section 2.3) and appears as dz in OFr. (spelt <s>, today [z]).[4]

The yod produced by this process (*dégagé à gauche* 'released to the left' in canonical descriptions) closes the preceding syllable, as witnessed by the fact that preceding tonic vowels always show checked behaviour, i.e. remain undiphthongized: voce > *voiz* (not **vueiz*) (mod. *voix* 'voice'), pace > *paiz* (not **peiz*) (mod. *paix* 'peace'), fac(e)re > *faire* 'to do' (not **feire*). Hence the output of k+i,e is heterosyllabic: j.ts.

Relevant illustration of Romance palatalization is provided in Table 1.

(3) Table 1
Romance palatalization: Vk+i,e > j+ts.

	Preceding tde tonic vowel				Following tde tonic vowel			
	Lat.	OFr.	mod.	gloss	Lat.	OFr.	mod.	gloss
k+i	vicīnu	veisin	voisin	neighbour	–			
	°būcīna	buisine		kind of trumpet				

2 The data presentation convention in running text that is used here and below is as follows: X > Y (mod. Z) where X is the Latin, Y the OFr. and Z the Mod. French form. In case Y = Z only Y is mentioned, and if Y has no modern representative it is glossed (in all cases an English gloss is also provided). The modern forms are only shown in order to identify the word: they do not always represent the regularly evolved older items. For example, the modern form in °prōditia > *proeise* (mod. *prouesse* 'feat') is not the evolved version of the OFr. form but rather a late borrowing from Latin. In Latin forms, the stressed vowel is underscored and vowel length is indicated by a macron (ā) (while short vowels appear without any diacritic).

3 Romance palatalization has affected all Romance languages except Central-northern Sardinian and velars before i in Dalmatian (Vegliot) (Lausberg 1967: §§311–313, 387–395). For voiceless k+i,e it occurred in the second or third century AD (Richter 1934: §69, La Chaussée 1989: 66). Voiced g+i, e is unexploitable since it produces jj > j in intervocalic position (flagellu > *flaiel* (mod. *fléau* 'plague') (Bourciez and Bourciez 1967:§119). The behaviour of k+i,e in strong post-consonantal position is examined in Sections 3 and 4.3.2. Relevant literature for intervocalic k+i,e includes Bourciez and Bourciez (1967:§116), Meyer-Lübke (1908: §156), Pope (1934: §§290–297), Rheinfelder (1953: §§740-747), Repetti (2016).

4 The evolution k+i,e > j.ts is shorthand for actual k+i,e > [c] > ʧ > j.ts where the yod is not the result of palatalization, but of depalatalization (see Scheer and Ségéral 2020).

k+e	placēre	plaisir		pleasure	voce	voiz	voix	voice
	aucellu	oisel	oiseau	bird	pace	paiz	paix	peace
	nocēre	noisir	nuire	to harm	cruce	croiz	croix	cross
	tacēre	taisir	taire	to keep quiet	fac(e)re	faire		to do
	lūcēre	luisir	luire	to gleam	°coc(e)re	cuire		to cook
	°domnicella	damoisele	demoiselle	damsel	°noc(e)re	nuire		to harm

2.2 Metathesis

Metathesis operates Cj > jC for C = Lat. t,s,r: ratiōne > *raison* 'reason', bāsiāre > *baisier* (mod. *baiser* 'to kiss'), paria > *paire* 'pair'. Note that the input to tj is actually tsj, the assibilation of t before yod being already effected in Latin (during the Empire: *Vincentzus* pour *Vencentius* etc., Adams 2013: 120–123, Väänänen 1981: §99, Sturtevant 1940: §196b,c). Hence ts+j > j+ts. After metathesis, ts,s undergo intervocalic voicing in further evolution to become dz (OFr. *rai[dz]on*) and z (OFr. *bai[z]ier*), both spelt <s> in OFr. (today both [z]).

Like the yod originating in Romance palatalization (Section 2.1), metathesized yod always closes the preceding syllable. That is, preceding tonic vowels do not diphthongize: palatiu > *palais* 'palace' (not **paleis*), Ambrosiu > *Ambrois* (mod. *Ambroise*, 'personal name' (not **Ambrueis*), coriu > *cuir* 'leather' (not **cueir*).

Relevant illustration of the metathesis pattern appears in Table 2.

(4) Table 2
metatdesis: C.j > j.C.

	Preceding tde tonic vowel				Following tde tonic vowel			
	Lat.	OFr.	mod.	gloss	Lat.	OFr.	mod.	gloss
tj	ratiōne	raison		reason	mal(i)fatiu	mauvais		bad
	pōtiōne	poison		poison	palatiu	palais		palace
	orātiōne	oraison		oration	3sg °mĭnūtĭat	menuise		to shape
	otiōsu	oisos	oiseux	idle	cymatiu	cimaise		cyma
	satiōne	saison		season	°latia	laise	'largeur'	widtd
	būteōne	buison	'buse'	buzzard	°prōditia	pröeise	prouesse	feat
sj	bāsiāre	baisier	baiser	to kiss	art(e)mesia	armoise		mugwort
	°clausiōne	cloison		partition	Ambrosiu	Ambrois	Ambroise	first name
	ma(n)siōne	maison		house	°pūtinasiu	punais		stinking
	fusiōne	foison		profusion	Gr. tarchasiu	tarchais	'carquois'	quiver
	nausea	noise		quarrel	Frk. °hasia	haise	'clôture'	fence
	to(n)siōne	toison		fleece				

rj	°exclariāre	esclairier	éclairer	to light	paria	paire		pair
	variola	vairole	vérole	syphilis	coriu	cuir		leatder
	°fūriōne	fuiron	furet	ferret	area	aire		area
					rasōriu	rasoir		razor
					fēria	foire	foire	fair

2.3 Intervocalic Voicing of ts, s

The result of both palatalization and metathesis, where it is an obstruent, undergoes intervocalic voicing under further evolution: placēre > °Vj.tsV > °Vj.dzV > *plaisir* 'pleasure' (palatalization), ratiōne > °Vj.tsV > °Vj.dzV > *raison* 'reason', bāsiāre > °Vj.sV > °Vj.zV > *baisier* (mod. *baiser* 'to kiss') (metathesis). The voicing observed occurs in intervocalic position: intervocalic voicing affects all voiceless obstruents of the language (vīta > OFr. *vide* [viðə] > OFr. *vie* 'life', etc.), and there is no other voicing process active.

As a matter of fact, though, the ts and s that undergo intervocalic voicing after palatalization and metathesis are not intervocalic: they are preceded by a coda yod: °Vj.tsV and °Vj.sV. That is, they occur in strong (postconsonantal) position and therefore should be protected from any further lenition (mercēde > *merci* [ts] 'thanks', versāre > *verser* 'to pour'). There is no way to construct their voicing before palatalization and metathesis apply either (hypothetical placēre > °plagēre, ratsiōne > °radziōne, bāsiāre > °bā[z]iāre). Regarding palatalization, there is a crucial asymmetry between voiced and voiceless velars: in intervocalic position the latter produces j+ts (placēre > *plaisir* 'pleasure'), while the former yields a (geminate) yod (flagellu > *flaiel* (mod. *fléau* 'plague'), see note 3). Hence hypothetical placēre > °plagēre would appear with a yod and no dz in OFr. The situation is worse for metathesis since even before its application the ts, s did not occur in intervocalic position: all C+yod clusters of the language are heterosyllabic C.j. Hence at no period of their evolution did ts in ratiōne > *raison* 'reason' and s in bāsiāre > *baisier* (mod. *baiser* 'to kiss') occur in intervocalic position.

The intervocalic voicing of consonants that are not intervocalic is thus a major problem (one that is never mentioned in either the traditional or the modern literature). An analysis is developed in Section 4.1.

3 Left-moving Yod is Lost if Preceded by a Coda

In all cases considered in Section 2 the syllable preceding k+i,e (palatalization) and C+yod (metathesis) was open in Latin: pla.cēre > *plaisir* 'pleasure', ra.tiōne > *raison*

'reason'. In fact it is only on this condition that left-moving yod can anchor, i.e. appear to the left of the velar (or its reflex) and the metathesis-triggering C. In the case where the preceding syllable is closed in Latin, left-moving yod is lost.

Hence mercēde > *merci* 'thanks' (not **meirci*) regarding palatalization in Table 3, cantiōne > *chançon* (mod. *chanson* 'song') (not **chainçon*) representing metathesis in Table 4 below.

(5) Table 3:
palatalization: yod is lost if preceded by a coda. VC.k+i,e > VC.ʦ.

Coda	Lat.	OFr.	mod.	gloss	Lat.	OFr.	mod.	gloss
gem.	°baccīnu	bacin	bassin	basin				
n	ancilla	ancele	'servante'	servant	prīncipe	prince		prince
	°gincīva	gencive		gum	cancellāre	chanceler		to stagger
r	mercēde	merci		thanks	porcellu	porcel	pourceau	swine
	°cercēdula	cercelle	sarcelle	teal	3sg °torc(e)t	torst	(il) tord	to twist
	°arciōne	arçon		saddletree	urceolu	orzuel	'bénitier'	stoup
l	calce	chals	chaux	lime	falce	fals	faux	scythe
	dulce	dols	doux	soft	poll(i)ce	pols, polz	pouce	thumb

(6) Table 4:
metathesis: yod is lost if preceded by a coda. VC.Cj > VC.C.

Coda	Lat.	OFr.	mod.	gloss	Lat.	OFr.	mod.	gloss
gem.	°mattea	mace	masse	mallet	°bottia	boce	bosse	bump
	°matteūca	maçüe	massue	club	Frk. °blettjan	blecier	blesser	to wound
r	°fortiāre	forcier	forcer	to force	scortea	escorce	écorce	bark
	°curtiāre	acorcir	accourcir	to shorten	martiu	marz	mars	March
l	°altiāre	haucier	hausser	to raise	°exaltiāre	essaucier	exaucer	to fulfil
	Frk. °bultjo	bouzon [ʦ]	boujon	big arrow	Frk. °sultja	souz [ʦ]	'marinade'	marinade
n	cantiōne	chançon	chanson	song	infantia	enfance		childhood
	linteolu	linçuel	linceul	shroud	crēdentia	crëance	créance	debt
p	captiāre	chacier	chasser	to hunt	°corruptiāre	corrocier	courroucer	to anger

There are no words illustrating heterosyllabic C.rj or C.sj. But there are words with a tautosyllabic cluster preceding yod: Tr.j.[5] Metathesis applies in these cases, i.e. Tr.j > j.Tr as in °cūpriu > *cuivre* 'copper'. This pattern, further illustrated in Table 5, demonstrates that the conditioning of metathesis is truly syllabic in kind: not just any preceding CC cluster blocks the anchoring of yod, only heterosyllabic C.C does. Tautosyllabic muta cum liquida (branching onsets) allow the yod to settle to their left just like simplex intervening consonants.

5 In this article T is shorthand for obstruents, R for sonorants.

(7) Table 5:
Metathesis Trj > jTr.

	Lat.	OFr.	mod.	gloss	Lat.	OFr.	mod.	gloss
prj	°cupriu	cuivre		copper	–			
brj	°ebriu	ivre		drunk	ēbriācu	ivraie		ryegrass
trj	arbitriu	arvoire	'illusion'	illusion	repatriāre	repairier	repairer	to repair
	mat(e)riame	mairien	merrain	stave	°lutria	loir(r)e	loutre	sea otter

4 Analysis of left-moving Yod

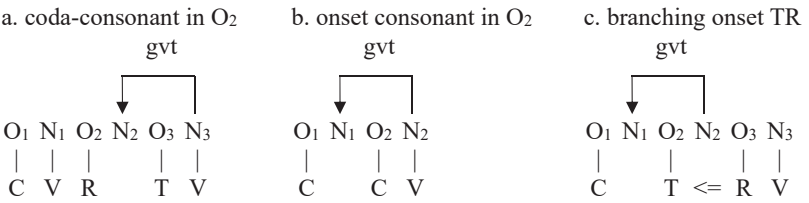
4.1 Strict CV

The analyses in this article use the devices of Strict CV Phonology (Lowenstamm 1996, Scheer 2004), which are briefly described in this section (a textbook introduction is available in Scheer 2015 and recent incarnations of this approach include Passino 2013, Faust 2014, 2015, Enguehard and Faust 2018, Scheer 2019). As was mentioned in Section 1 and will be evident in Section 7, the existence of an empty nucleus separating s+C is crucial for the solution of the empirical puzzle. Therefore the syllabic framework matters: in Strict CV Phonology syllabic constituent structure boils down to a strict sequence of non-branching onsets and non-branching nuclei. Hence all consonants belong to a C position and are followed by a nucleus. In case the following segment is another consonant, this nucleus is empty. Hence all clusters that are [CC] on the surface enclose an empty nucleus /CøC/ (except for contour segments of course). This is also true for s+C clusters, which are thus /søC/.

In the absence of branching constituency that defines basic syllabic oppositions such as onset vs coda consonants in the classical approach, lateral relations among constituents take over this function.[6] As shown in Figure 1, a coda consonant occurs before a governed empty nucleus (8a), while the nucleus of an onset consonant is contentful (8b). A tautosyllabic cluster (branching onset) is depicted in (8c): the two consonants are related by an (infra)segmental relation based on their sonority (<= in (8c), which is the reason why the enclosed nucleus remains empty. Empty nuclei indeed need a reason to be empty: receiving government is this reason for N_2 in (8a) and N_1 in (8b), the segmental relation in (8c).

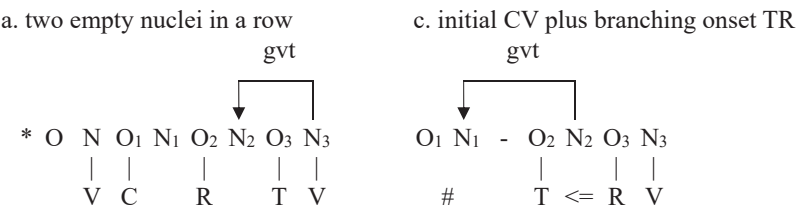
6 Although literally there are no branching onsets, codas or closed syllables in Strict CV, we continue to use the familiar vocabulary to refer to the phenomena and syllabic configurations at hand.

(8) Figure 1:
Syllabic objects in Strict CV.



Government is a regressive (right-to-left) lateral relation among syllabic constituents whose origin is a nucleus. The segmental expression of its target is inhibited: nuclei under government are empty. Only ungoverned nuclei may act as governors: N_2 in (8a) and N_1 in (8b,c) will be unable to govern because they are themselves governed. In (8c) N_2, although empty, is a good governor since it is not itself governed. As shown in (9a), a structure with two empty nuclei in a row that demand government is ill-formed since only the rightmost empty nucleus N_2 will be able to be governed. Note that (9a), were it well-formed (i.e. were N_1 governed), would show two coda consonants in a row, i.e. two consonants followed by a governed empty nucleus, in O_1 and O_2. The ill-formedness of double coda strings will play a central role in Section 4.2.

(9) Figure 2:
Double coda and initial CV.



Finally, empirical and conceptual arguments accumulate indicating that morpho-syntactic divisions cannot be diacritics (#, *ω*, etc.) when they bear on phonological processes (Scheer 2008, 2012). Rather, they need to be translated into regular phonological units in order to meet modular standards. This is why the beginning of the word instantiates an empty CV unit (the initial CV), O_1N_1 in (9b) (Lowenstamm 1999). Like all other empty nuclei, N_1 of the initial CV needs to be governed. This is the reason why coda clusters cannot exist word-initially in languages that allow only clusters of rising sonority (branching onsets TR): they would create two empty nuclei in a row. In languages such as Moroccan Arabic or Czech where coda clusters #RT do occur word-initially, the initial CV is absent. Arguments for the initial CV are presented in greater detail in Scheer (2012, 2014).

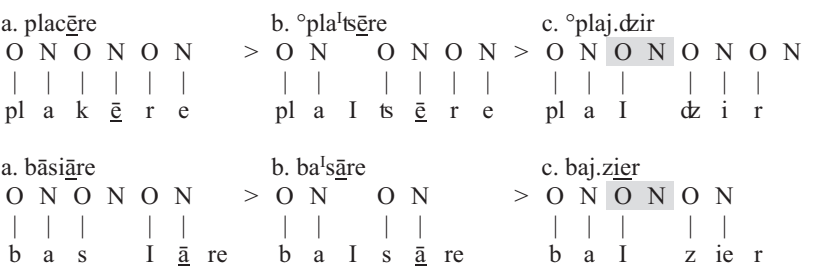
4.2 A Floating Piece of Melody |I| (Floating Yod)

The phenomenon described in Sections 2 and 3 concerns a left-moving yod which is able to anchor as a coda only in case no coda is already present (otherwise it is lost). This directly translates into an autosegmental analysis where a piece of palatal melody, represented as |I| in (10), moves left and tries to parachute as a coda.

Note that the syllabic space which accommodates successfully anchored |I| is absent in Latin: the etymological source (e.g. placēre) does not possess any coda constituent to the left of the velar, but after anchoring of |I| there is a coda (> ° plaj.ʤir > *plaisir* 'pleasure'). Hence the syllabic space that hosts the |I| must be (diachronically) epenthetic (grey-shaded in (10)): in (10c) the |I| that has successfully anchored to become a coda yod is associated with the onset of the epenthetic (grey-shaded) ON unit whose nucleus is empty (note that the representation of pl- is simplified for the sake of exposition).

Against this background, Figure 3 reads as follows: based on the Latin form in (10a), palatalization of k+i,e produces j+ts where in (10b) ts is associated with the onset of the original velar, preceded by a floating palatal element |I|. Finally in (10c), following the epenthesis of extra (grey-shaded) syllabic space, the floating |I| associates with the now available onset, which makes it a coda yod.[7]

(10) Figure 3:
Successful anchoring of floating |I|.



7 Straka (1979 [1965]: 322ff) and his followers hold that yod in this case is a "son de transition" ('transitional sound') and call it "yod implosif" ('implosive yod'). Blondin (1975: 248) says it is only an acoustic transition and becomes integrated into the linear chain of phonemes (phonemicization) only after a while. This analysis expresses the autosegmental workings shown in (10) in structuralist vocabulary. Our analysis may thus be considered an autosegmental version thereof where the "transitional" character of the palatality that Straka thought is phonetic proves to be phonological (a floating piece of melody).

Now recall the conundrum presented in Section 2.3: consonants that are never intervocalic (ts, s) seem to undergo intervocalic voicing. The solution is contained in the analysis based on the floating palatal element |I|: at the stage (10b) where it already occurs to the left of the consonant but is still floating, ts and s *are* intervocalic. That is, intervocalicity is not defined at the segmental (or phonetic) level, but regarding syllable structure: a consonant is intervocalic iff it belongs to an onset that is flanked by two contentful nuclei. This is the case of ts and s in (10b).

4.3 Loss of the Floating Yod in Presence of a Coda

4.3.1 Prohibition of Super-heavy Syllables

The restriction to light (i.e. CV) and heavy syllables (i.e. CV, CVC) only is a ground rule governing the entire language in all developmental stages until Old French. The prohibition of super-heavy syllables CVC, CVCC is responsible for one of the major events in the development of French, diphthongization. This process affects all long vowels of the language (and only these), whereby relevant length is not Latin length but, after the collapse thereof, the new length caused by tonic lengthening. That is, as in many other languages (including for example modern Italian, e.g. Marotta 1984), vowels that were stressed in Latin are lengthened, but only when they occur in open syllables (e.g. Loporcaro 2015: 18ff). Hence in order for a vowel to undergo lengthening and thus subsequent diphthongization, it needs to be stressed and occur in an open syllable. The latter condition prohibits the creation of CVC, i.e. of a super-heavy syllable. This is shown in Table 6: diphthongs are banned from closed syllables.

(11) Table 6:
Evolution of tonic vowels in

	open syllables				closed syllables			
	Lat.	OFr.	mod.	gloss	Lat.	OFr.	mod.	gloss
a	mare	mer		sea	carta	charte		charter
i	pira	poire		pear	virga	verge		stick
e	feru	fier		proud	herba	erbe	herbe	grass
o	mola	muele	meule	millstone	porta	porte		door
u	gula	gueule	gueule	mouth	surdu	sourt	sourd	deaf

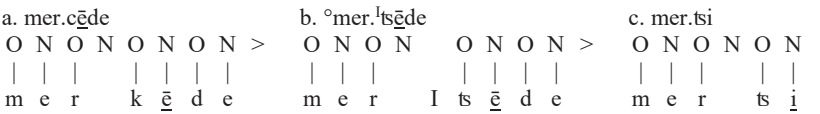
Another diagnostic for the prohibition of CVC syllables is the resolution of intervocalic tr, dr which (through ðr and the loss of ð) produce a singleton r after long, but a geminate rr after short vowels: compare quadrātu > *carré* 'square' (gemination of r after an unstressed, hence short vowel) with patre > *pere* (mod. *père* 'father') (r remains

ungeminated after a tonic, hence long vowel) (Fouché 1952–61: 719–723). Gemination here is compensatory in kind: the position vacated by the ð is occupied by the r, but this move is inhibited if it creates a super-heavy CVC syllable (patre > °pāðre > *pār.re). The pattern is examined in greater detail in Scheer and Ségéral (2017).

4.3.2 Unsuccessful Anchoring of the Floating Yod

The reason why the floating |I| produced by palatalization and metathesis is lost in presence of a coda consonant to its left is the prohibition of super-heavy syllables exposed in the previous section. Hence in mercēde shown in (12a), the floating |I| issued by palatalization in (12b) cannot anchor as a coda yod because this would create a super-heavy syllable *CVCC with two codas (*mer.j.tsi). Being unable to anchor, the floating |I| is lost. The same goes for the parallel cases of metathesis (cantiōne > °can.tsjōne > °can.ˈtsōne > *chan.çon* (mod. *chanson* 'song')).[8]

(12) Figure 4:
Unsuccessful anchoring of floating |I|.



5 s+C

As may be expected from the consistently irregular behaviour of s+C, this cluster contravenes all generalizations established so far.

Let us first document the fact that s+C behaves just like any other coda cluster when it occurs in intervocalic position: as shown in Table 7, #preceding tonic vowels never diphthongize.

(13) Table 7:
Intervocalic s+C: a regular coda cluster.

	Lat.	OFr.	mod.	gloss		Lat.	OFr.	mod.	gloss
I	capistru	chevestre	chevêtre	halter	u	musca	mosche	mouche	fly
e	testa	teste	tête	head	o	nostru	nostre	notre	our
a	°blastemiāre	blastengier	'blâmer'	to blame					

8 The type C.k+(i,e) vinc(e)re > *veintre* (mod. *vaincre* 'to defeat'), canc(e)ru > *chaintre* (mod *chancre* 'canker') and °fulg(e)re > *foildre* (mod. *foudre* 'lightning') is examined in Scheer and Ségéral (2020).

Even though s in s+C is thus a coda based on this diagnostic, left-moving yod is able to parachute to its left and to become a coda yod. This should be impossible since the presence of a coda blocks the anchoring of |I| (Section 4.3). It is shown in Table 8 below that in all paradigms (k+i,e, k+(i,e), metathesis) the |I| happily appears as a coda yod in OFr.

(14) Table 8:
Successful anchoring of floating |I| to the left of s+C. V^{I}s.CV > VjsCV.

		Lat.	OFr.	mod.	gloss	Lat.	OFr.	mod.	gloss
pal.	sk+i,e	vascellu	vaissel	vaisseau	vessel	piscīna	peissine	piscine	pool
	sk+(i,e)	°nāsc(e)re	naistre	naître	to be born	pāsc(e)re	paistre	paître	to graze
		crēsc(e)re	croistre	croître	to grow	°parēsc(e)re	pareistre	paraître	to appear
met.	st+j	angustia	angoisse		anxiety	bestia	bisse	biche	doe
		ostiāriu	uissier	huissier	usher	pastiōne	paisson		grazing
	str+j	ostrea	uistre	huître	oyster	post(e)riōne	poistron	'cul'	bum
	sk+j	ascia	aisse	aissette	plate	pisciōne	poisson		fish
		musciōne	moisson	'moineau'	sparrow	fascia	faisse	fasce	strip of land
	ss+j	°bassiāre	baissier	baisser	to lower	messiōne	moisson		harvest
		crassia	craisse	graisse	fat	°spissia	espeisse	'épaisseur'	thickness

Finally, note that expected sk+i,e > sts where ts is the regular result of palatalization (vascellu > °vajstsellu) or metathesis (angustia > °angustsia> °angojstse) in fact appears as ss (> *vaissel* (mod. *vaisseau* 'vessel'), *angoisse* 'anxiety'). This evolution is analysed in section 7.3.

6 What s+C is not

6.1 The Empirical Puzzle

The empirical puzzle is thus as follows: s+C behaves like a heterosyllabic cluster in intervocalic position (Vs.CV, testa > *teste* (mod. *tête* 'head')), but as a non-heterosyllabic item when preceded by a consonant: Vj.sCV (°nāsc(e)re > *naistre* (mod. *naître* 'to be born')). Note that the right context is irrelevant since in both cases s+C is followed by a vowel.

s+C is thus janus-faced syllabically speaking, and phonetics will not tell the analyst in which aggregate state it is. The observation that s+C is playing several games at the same time, sometimes behaving like a (non-heterosyllabic) singleton but at other times like a (coda) cluster, is not new (Goad 2011, 2012). Two things are

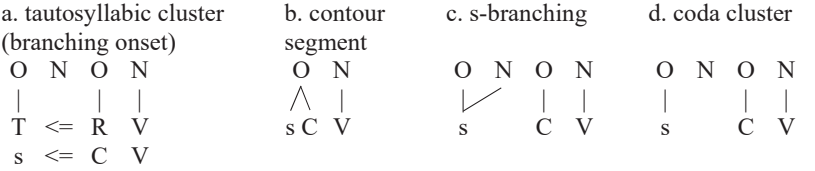
new, though: (i) the identification of the context that produces heterosyllabic / non-heterosyllabic s+C, and (ii) the syllabic identity of s+C when it is non-heterosyllabic.

Section 6.2 first looks at the latter question, which is the one that has spread grief and despair among phonologists, and produced a whole range of candidate syllabic identities (see the introduction). The former question will then be addressed in Section 7 where it will turn out that non-heterosyllabic s+C is not triggered by a preceding consonant, but rather by a preceding empty nucleus.

6.2 Candidate Syllabic Identities for s+C in VC.sCV

In VC.sCV, s+C cannot be heterosyllabic since the language does not tolerate super-heavy syllables *VC.s.CV with a double coda. What could then be its syllabic status? There are two obvious candidates: a tautosyllabic cluster (branching onset) shown in (15a) and a contour segment (equivalent to an affricate, i.e. s and C both depending on one single x-slot) depicted in (15b). A third option introduced by Barillot and Rizzolo (2012) is shown in (15c): s branches on the empty nucleus to its right. Note that the difference between the s-branching structure in (15c) and a regular coda cluster recalled in (15d) is only the branching of the s.[9]

(15) Figure 5:
Candidate syllabic identities of s+C clusters.



9 s+C clusters have been studied in the Strict CV approach by, among others, Seigneur-Froli (2006), Sanoudaki (2007, 2010), Rizzolo and Barillot (2012), Prince (2016), Prince and Chiu (2016) and Polgárdi (in press). As was mentioned, the s-branching analysis was first proposed by Rizzolo and Barillot (2012) and further implemented by the more recent references quoted. When s is granted the ability to branch, this can a priori concern the preceding or the following nucleus. The literature mentioned (followed here) implements right-branching s, but Polgárdi (in press) also entertains left-branching s (directionality is parametric in her analysis: left-branching in Portuguese and Italian, right-branching in English). The question of directionality touches on theory-internal issues that are not crucial for the core idea of elastic s+C: whatever the directionality, s in an s+C cluster branches when for some reason it cannot be a coda.

Two structures may be excluded right away as a fit for C.sCV (°naj.stre < °nāsc(e)re (mod. *naître* 'to be born')). As was mentioned s+C cannot be a coda cluster (15d) because that would produce a double coda structure (a super-heavy syllable) VC.s.CV which we know is illegal in the language. s+C cannot be a tautosyllabic cluster (branching onset) (15a) either: the s+C literature is unanimous about the fact that s+C never identifies as a branching onset, under no circumstances and in no language (Goad 2011, 2012).[10] Finally, the extrasyllabic solution (not shown in (15)) is discarded because extrasyllabic consonants only occur at word margins (peripherality condition, Clements 1990: 290, Roca 1994: 213).

6.3 s+C is not a Contour Segment

We are thus left with two candidates, the contour segment in (15b) and the s-branching structure in (15c). The contour segment solution is refuted by the behaviour of ss+j in metathesis. It was shown in (14) that metathesis does go into effect with yod successfully anchoring as a coda: °bassiāre > *baissier* (mod. *baisser* 'to lower'). This is unexpected since regular geminates follow the rule by blocking metathesis (°bottia > *boce* (mod. *bosse* 'bump')): the first leg of a geminate constitutes a coda and the presence of a coda is supposed to block the anchoring of the floating |I|. Hence this is true for all geminates except for ss. The only conclusion to be drawn from this is that ss is an instance of s+C: like all other s+C clusters it allows for metathesis to take place. In other words, metathesis is blocked in presence of a coda, except if the coda is s (Vs.CV, Vs.sV). Therefore, ss like all other s+C clusters is non-heterosyllabic in VC.ssV. The conclusion that the geminate ss is an s+C cluster is counter-intuitive, and whatever the syllabic identity of non-heterosyllabic s+C turns out to be, it must be shared by ss.

The crucial property of ss that refutes an analysis in terms of a contour segment is that, like all other geminates (gutta > *gote* (mod. *goutte* 'drop'), cippu > *cep* 'vine stock', etc.), it does not undergo intervocalic voicing: compare °bassiāre > *baissier* [s] (mod. *baisser* 'to lower') with bāsiāre > *baisier* [z] (mod. *baiser* 'to kiss'). Hence ss is a geminate, which means that it occupies two C positions – while the definition of the contour segment (15b) is to represent one single C position.

We conclude that (i) ss is both an s+C cluster *and* a geminate, (ii) s+C in VC.sCV is a bipositional cluster and hence not a contour segment, and (iii) ss in VC.ssV, like

10 One of the many reasons is the fact that the C of s+C may itself be a branching onset, as in our example °nāsc(e)re > °naj.stre > *naistre* (mod. *naître* 'to be born') where s+C is s+tr (more examples in (14)). If s+C were a branching onset, s+TR would need to be a triple branching onset, a monster structure that is unwarranted by any standards.

all other s+C clusters, is non-heterosyllabic (i.e. a non-heterosyllabic geminate: see the representation in (18b)).

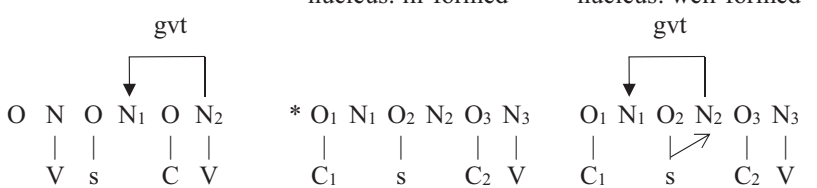
7 What s+C is

7.1 s-branching on Demand

Of all candidate structures in (15) only (15c) where s branches on the following empty nucleus stands. We now show how s-branching in s+C clusters works: it meets all requirements for s+C in VC.sCV (this section), it is elastic and falls back on its original heterosyllabic status as soon as the reason for s-branching disappears (Section 7.2), it is consistent with the s+C phenomenology beyond the diachronic French pattern (Section 7.3) and it makes correct predictions regarding the evolution sts > ss (Section 8) and the loss of the middle consonant in CCC clusters (Section 9).

In the absence of specific events, s+C clusters are regular coda clusters, i.e. s is a coda and C an onset (16a). This regular, unmarked structure is modified when s+C for some reason comes to stand after an empty nucleus because the resulting structure (16b) is ill-formed: it contains two empty nuclei in a row (see (9a)). S-spreading in (16c) repairs this ill-formedness: N_2 is now contentful and can govern N_1.

(16) Figure 6:
s+C.



In sum, the solution to the syllabic mystery (2a) that derives from the analysis of the French pattern is shown in (16): s+C is heterosyllabic (16a) unless it is preceded by an empty nucleus, in which case s-branching makes it non-heterosyllabic: in (16c), C_1 is a coda consonant since it is followed by a governed empty nucleus, while s+C is a non-heterosyllabic cluster because the nucleus enclosed is not empty or governed. This is exactly the description of the VC.sCV pattern produced by left-moving yod (Sections 2 and 3). Note that, as required, (16c) is non-heterosyllabic but not a (tautosyllabic) branching onset (8c).

7.2 Elastic s+C

The regular syllabic status of s+C is heterosyllabic, and s branches only when it needs to, i.e. in case the cluster comes to stand after an empty nucleus. This is the case with palatalization and metathesis when |I| anchors as a coda yod to the left of s+C (C_1 in (16b,c)). That s-branching is really only a repair strategy is shown by the fact that as soon as its cause disappears s+C falls back on its regular status as a heterosyllabic cluster, i.e. s ceases its branching.

The subsequent evolution of successfully anchored yod (placēre > °plaj.ʤir, vicīnu > °vej.ʤin) is as follows: before the beginning of the Old French period it forms a diphthong with the preceding vowel (> OFr. plai.ʤir, vei.ʤin) and this diphthong develops regularly (> plɛ.ʤir, voi.ʤin (mod. pl[ɛ]sir 'pleasure', v[wa]sin, 'neighbour')).

In the case of °nāsc(e)re or crēsc(e)re, vowel plus coda yod (> °naj.stre, ° crej.stre) thus evolves into a diphthong (> °nai.stre, °crei.stre). This move frees the following s+C cluster from the pressure of a preceding empty nucleus: the yod has vocalized and the segment preceding the s+C is now a vowel. Therefore the s ceases to branch and the s+C falls back on its original heterosyllabic status.

That the s of OFr. *naistre*, *croistre* is a coda consonant is shown by the fact that it undergoes deletion like coda s everywhere else (beginning in the 11th century before voiced, in the 13th century before voiceless C): testa > OFr. *teste* > *tête* 'head', hosp(i)te > OFr. *oste* > *hôte* 'host' like OFr. *naistre* > *naître* 'to be born', OFr. *croistre* > *croître* 'to grow'.

7.3 Extending the Analysis Beyond the French Pattern

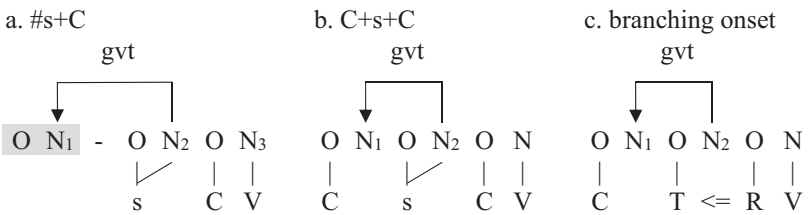
The classical case of misbehaving s+C is in word-initial position: in languages like English or Italian which otherwise only allow for rising sonority clusters #TR, the sonority-based generalization (sonority sequencing) is only violated by #s+C clusters where sonority is falling. Faced with this problem, a number of syllabic identities for #s+C have been devised: #s+C was argued to be a contour segment (Selkirk 1982: 346ff, Carr 1993: 212, Wiese 1996: 42f, van de Weijer 1996: 177ff), extrasyllabic (Steriade 1988, Rubach and Booij 1990, Hall 1992: 122ff), a coda-onset cluster (Kaye 1992) or a cluster whose first member belongs to a specific constituent, the appendix (Kenstowicz 1994: 260ff, Fudge 1969, Kiparsky 1979, Halle and Vergnaud 1980).

All of these devices are specifically designed to account for word-initial s+C clusters. The analysis discussed in Section 7.1 does not involve any reference to the word-initial situation and does not need any special device for this position: the word-initial pattern falls out given the Strict CV environment where the beginning of the word identifies as an empty CV unit (see (9b) in Section 4.1). The representation

of #s+C is thus as in (17a) where the initial CV is grey-shaded: #s+C is preceded by an empty nucleus and s therefore branches. What word-initial #s+C and s+C preceded by a consonant (17b) share is thus the presence of an empty nucleus preceding the cluster, which demands government. This shows that non-heterosyllabic (s-branching) s+C does not occur after consonants, but after empty nuclei.

The identical behaviour of s+C (non-heterosyllabicity) in the disjunctive environment {#,C}__ can only be captured with reference to a preceding empty nucleus. This is the whole point made by the Coda Mirror (Ségéral and Scheer 2001, 2008) which describes the workings of lenition and fortition: the disjunction {#,C}__ defines the Strong Position where consonants are shielded against lenition and undergo strengthening.

(17) Figure 7:
s+C.



The comparison of s-branching s+C in (17a,b) and a regular branching onset in (17c) shows that both structures achieve the same effect (the preceding empty nucleus N_1 is governed), yet are distinct. In both cases N_2 is ungoverned and hence able to govern N_1, but it receives content from the s in (17a,b), while it escapes government in (17c) because it is enclosed in a segmental domain. The effect is the same in all cases: branching onsets may occur word-initially and after consonants (French *ar.bre* 'tree', *per.dre* 'to lose'), and so may s+C. Coda clusters on the other hand, involving s+C (VsøCV) or not (VRøTV), are banned from these positions.

Finally, an upshot of the analysis is the explanation it provides for the singleton mystery (2b). The peculiarity of s+C clusters is the fact that s branches on the following empty nucleus. This nucleus, however, only exists when s is followed by a consonant: there is no such nucleus that it could branch on when it is followed by a vowel.

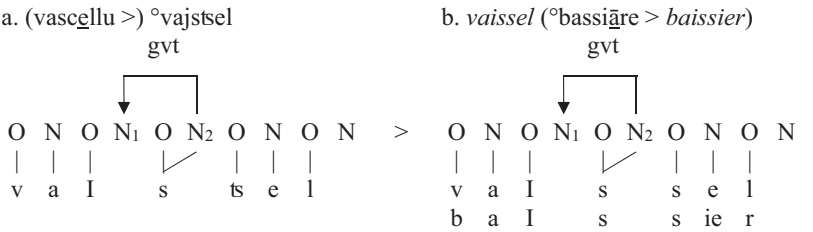
8 sts > s

Recall from (14) in Section 5 that while the expected result of sk+i,e and stj is (yod plus) sts, the actual reflex in Old French is ss: vasc̲ellu > °vajstsellu > *vaissel* (mod.

vaisseau 'vessel'), angustia > °angustsia> °angojstse > *angoisse* 'anxiety'. Table 8 shows that this is true for all cases where sts is expected:sk+i,e, stsj (< stj, skj).[11]

The mysterious evolution sts > ss receives a straightforward explanation given the syllabic identity of s+C introduced in Section 7: in all cases sts is preceded by the yod coming from palatalization or metathesis, which means that the s is preceded by an empty nucleus and will branch. As a consequence, the ts is intervocalic, as shown in (18a): it is flanked by contentful nuclei (recall from Section 4.2 that this is the definition of intervocalicity in the language).

(18) Figure 8:
sts > ss.



As a matter of fact, all intervocalic stops of the language spirantize (rīpa > *rive* 'river bank' etc., e.g. Bourciez and Bourciez 1967:§§165 sq., §142–H). Hence intervocalic ts must also spirantize, and this is precisely what the mysterious evolution sts > ss represents: the intervocalic spirantization of ts, whose non-occlusive version is s.[12]

9 Independent Confirmation: Evolution of CCC

The distribution "regular s+C after filled, s-branching s+C after empty nuclei" appears also elsewhere in the evolution from Latin to Old French, i.e. independently of left-moving yod.

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11 Recall that assibilation produces stj > stsj (Section 2.2). In the cluster skj, palatalization of k+j > ts (°glacia > *glace* 'ice') produces stsj. The case of the type °nāsc(e)re > *naistre* (mod. *naître* 'to be born') is different since no sts is expected here: the palatalization of k+i,e produces t instead of the expected ts when the palatalizing vowel is prone to syncope (note 8). Hence these words have never featured an sts cluster.

12 (18b) also depicts °bassiāre > *baissier* (mod. *baisser* 'to lower') for convenience, to show that *baissier* is exactly identical to the result of spirantization in vascellu > *vaissel* (mod. *vaisseau* 'vessel'): a geminate s (so-called fake geminate made of two individual segments, Hayes 1986) whose first s branches on the following empty nucleus.

In triconsonantal clusters $C_1C_2C_3$ (either present in Latin or created by syncope) the middle consonant C_2 is lost (19a) unless C_2 and C_3 make a good branching onset, i.e. muta cum liquida (19b). This is shown in Tables 9 and 10 below.

(19) Table 9:
Evolution of CCC.

		CCC				CC(v)C			
	C_2	Lat.	OFr.	mod.	gloss	Lat.	OFr.	mod.	gloss
a. C_2 lost	p	tem[p]tāre	tenter		to try	p tem[p](u)s	tens	temps	time
	p	redem[p]tiōne	raençon	rançon	ransom	b gal[b](i)nu	jalne	jaune	yellow
	d	Frk. °gun[d]fano	gonfanon	gonfalon	standard	d car[d](i)ne	charne	carne	meat
	k	san[c]ta	sainte		saint	k cir[c](i)nu	cerne		rings (eye)
	k	pun[c]tu	point		point	g gur[g](i)te	gort	gord	kiddle
		C.TR				C.T(v)R			

	C_2	Lat.	OFr.	mod.	gloss	Lat.	OFr.	mod.	gloss
b. C_2 sur-vives	p	implēre	emplir		to fill	p rump(e)re	rompre		break up
	b	umbra	ombre		shadow	b °arb(o)re	arbre		tree
	t	ultra	outre		beyond	t alt(e)ru	altre	autre	other
	d	Alexandru	Alixandre	Alexandre	Alexander	d vend(e)re	vendre		to sell
	k	inclīnāre	incliner		to incline	k anc(o)ra	ancre		anchor
	g	malgrātu	maugré	‘chagrin’	sorrow	g ung(u)la	ongle		nail

When C_2 = s, though, the middle consonant remains. This is shown in (20a).[13]

(20) Table 10:
Evolution of CsC and sCC.

	CCC					CC(v)C			
	Lat.	OFr.	mod.	gloss		Lat.	OFr.	mod.	gloss
a. CsC	obscūru	oscur	obscur	obscure		frax(i)nu	fraisne	frêne	ash
	obstāre	oster	ôter	take off		max(i)mu	maisme	‘en particulier’	in particular
	Frk. halsberg	osberc	haubert	hauberk		3sg °torc(e)t	tuerst	(il) tord	to twist
						prox(i)mu	proisme	‘proche’	close
b. sCC	as[th]ma	asme	asthme	asthma		aes[t](i)māre	esmer	estimer	to estimate
						°blas[t](e)māre	blasmer	blâmer	to blame
						hos[p](i)tāle	ostel	hôtel	hotel
						sus[p](i)cāre	soschier	‘présumer’	to presume

13 C_1 in $C_1C_2C_3$ is always a coda and in the examples in (19a) and (20a) follows the regular evolution in this position: b > ø (cub(i)tu > *code* (mod. *coude* ‘elbow’)), al > aw > o (alba > *aube* ‘dawn’), k > j (facta > *faite* ‘done’). Also note that the affricate ts whose second component is s, also counts as an s-sound in the language, i.e. produces stable CtsC clusters (simplified to CsC in OFr.):grac(i)le > °grajtsle > *graisle* (mod. *grêle* ‘skinny’), ac(i)nu > °ajtsne > *aisne* (mod. *aine* ‘berry’) etc.

The effect of sC (20a) and a branching onset TR (19b) is thus the same: both may be preceded by a coda consonant without the middle consonant of the CCC incurring any damage. This equivalence was discussed in Section 7.3, see (17b,c). A regular CCC cluster (19a) where C_2C_3 is neither s+C or TR is ill-formed, though, as shown in (16b): both empty nuclei N_1 and N_2 call for government but the contentful N_3 can only govern one of them. Therefore O_2N_2 (containing the middle consonant) is removed, N_3 governs N_1 and the structure is well-formed.

It is not just any s+C that preserves the $C_1C_2C_3$ cluster, though: when s+C instantiates C_1C_2 (20b), the middle consonant is lost like any other middle consonant in regular CCC clusters. This is because the s+C is preceded by a vowel: the s is not called to branch, which means that the s+C is a regular coda cluster and hence sCC an ordinary CCC.

10 Conclusion

On the preceding pages the elastic s+C distribution "regular s+C after filled, s-branching s+C after empty nuclei" (with the latter context identifying as "word-initially or after codas" {#,C}__) was identified in the diachronic patterns of French discussed.

Of course different languages may practice different repairs, and s-branching is only one option: word-initial (heterosyllabic) s+C for instance may be repaired by s-branching and the result is segmentally unmodified #sC, but it may also be repaired by epenthesis of a vowel to its left (Romance prosthesis, e.g. sponsu > Fr. *époux*, Prov., Cat. *espos*, Sp., Port. *esposo* 'husband', Lausberg 1967: §353) or within the cluster (e.g. loanword adaptation in Kamtok, a Cameroon Pidgin English where Eng. *blind* is *blɛn* but Eng. *stone*, *spoon* appear as *siton*, *sipun*, Fleischhacker 2005: 61).

The essence of elastic s+C, then, is really this: it defines a heterosyllabic default for s+C clusters and holds that some repair will occur in case, pending on language-specific circumstances, a heterosyllabic parse is illegal. The circumstances at hand surely include the presence of an empty nucleus to the left of the s+C, but may also extend to other, language-specific patterns. For example, in a language where super-heavy rhymes are prohibited, a heterosyllabic parse of s+C is impossible after long vowels: *VVs.CV. S-branching will then produce VV.sCV.[14]

14 The language implementing the evolution from Latin to French that was studied is actually a case in point: super-heavy syllables are prohibited and *VVs.CV should therefore be illegal. The thing is that this pattern cannot possibly occur for diachronic reasons: long vowels are always the result of tonic lengthening in open syllables, but vowels preceding s+C will never be lengthened because, precisely, they are closed by the heterosyllabic s (Section 4.3.1).

Faifi Arabic (spoken in Saudi Arabia) as described by Alfaifi and Davis (2019: Ms) appears to be a case in point.

Elastic s+C also identifies one possible repair that may be chosen by languages, s-branching, which unlike other repairs (such as vowel epenthesis or consonant deletion) is purely representational and leaves the surface segmental string unmodified.

Of course, elastic s+C needs to be run against the consistently anomalous behaviour of s+C: it remains to be seen whether it can account for the various s+C effects that are reported in the literature when the surface string itself remains unmodified.

In a number of languages where word-initial clusters must be of rising sonority but where initial s+C occurs, there are diagnostics showing that in word-internal intervocalic position s+C is a regular coda cluster. Hence the mid vowel preceding s+C in relevant southern varieties of French where +ATR [e,o,ø] occur in open but -ATR [ɛ,ɔ,œ] in closed syllables in strict complementary distribution, s+C is always preceded by -ATR: *rester* [ɛ] 'to remain', *poster* [ɔ] 'to post' etc. In the same way in Italian, only vowels in open syllables are subject to tonic lengthening (*fato* [aa] 'fate', *capra* [aa] 'goat', against *parco* [a] 'park'). Tonic lengthening is absent before s+C, showing its heterosyllabic identity (*pasta* [a] 'pasta'). However, in both French and Italian initial s+C clusters cannot be coda clusters since these are banned from the word-initial position. This is precisely the distribution predicted: s+C is heterosyllabic when preceded by a vowel, but non-heterosyllabic (s-branching) when preceded by an empty nucleus word-initially.

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