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*The curious case of Cj clusters in English**

The word-initial[1] consonant clusters in English fall into two groups, those beginning with s—sometimes ʃ—and those that do not. Clusters beginning with s or ʃ have been troubling phonologists ever since they noticed the relevance of sonority in organizing sound strings. We will not be very much concerned with them here. The other clusters, those that do not begin with s or ʃ, almost exclusively contain two consonants and are characterized by the regularities listed in (1).

(1) a. the second member is one of l r j w
b. the first member is never a palatal/postalveolar (recall we have excluded ʃ-initial clusters)
c. the two members are usually not homorganic (if we take r to be palatal/postalveolar)
d. the first member is a plosive or a voiceless fricative before l r w
e. only a limited set of vowels occur after a cluster ending in j
f. these clusters occur significantly more often before a stressed vowel than before an unstressed vowel, except for those involving j

In this paper we are looking at the last three of these regularities. Implicit in (1d) is the claim that yod may occur not only after plosives and voiceless fricatives, but also after voiced fricatives and sonorants, as in *view* vjʉw, *music* mjʉwzɪk, *huge* hjʉwdʒ.[2] (1e) indicates that postconsonantal yod is (or at least was) in a closer relationship with the following vowel than the other postconsonantal sonorants. Finally, (1f) also proves j to behave exceptionally among the other nonnasal sonorants, r, l, and w.[3] We will look for possible explanations for these facts about the phonotactics of English.

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[1] To avoid theoretical issues, we will look at word-initial clusters where available. Word medially the same clusters often (always?) mimic their behaviour, as far as phonotactic constraints go.

[2] We here take h to be a sonorant. Nothing crucial hinges on this decision.

[3] If h is a nonnasal sonorant, it ought to occur as the second member of consonant clusters. Perhaps it does: *pit* phɪt, *tit* thɪt, *kit* khɪt. Nevertheless, we ignore this possibility here.

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1 The oddity of CjV

If we examine obstruent + liquid clusters in English, we find that restrictions hold between the two consonants, but not between the liquid and the following vowel. Consider the data in (2).

(2) a. Cj—	b. Cw—	c. Cl—	d. Cr—
mute mjʉwt	(swoon swʉwn)	flute flʉwt	fruit frʉwt
pure pjoː	quart kwoːt	flaw floː	frog frɔg
(pure pjəː)	quirk kwəːk	blurb bləːb	brush brəʃ
(piano pjaːnəw)	qualm kwaːm	class klaːs	grass graːs
	dwell dwɛl	bless blɛs	dress drɛs
	twin twɪn	bliss blɪs	brief brɪjf

A word-initial consonant + liquid cluster may be followed by any[4] vowel, as illustrated in (2c) and (2d). We do find constraints with the two glides though. In (2b) *swoon* is in parentheses, because wʉ is only possible after s, and due to their odd properties we have excluded s-initial clusters. Other consonants do not occur before wʉ, when they did, the glide was lost: cf *two* tʉw, as opposed to the etymologically related *twice, twin, twelve, between,* Dutch *twee,* etc, all of which still contain w.

Compared to the liquids and w, the examples in (2a) show that j is much more related to the following vowel. It occurs with ʉ, o, and ə for speakers of British English. With the other vowels it only occurs in recent loanwords: eg *Myanmar* mjánmáː, *pied-à-terre* pjɛ́jdatɛ́ː. Compared to the liquids and w, (1d) states that j is much less related to the preceding consonant: this position is not restricted to plosives and voiceless fricatives, cf (4) further below. These phonotactic facts may lead one to see jʉ as a unit, possibly a rising diphthong. However, there are a number of reasons for being suspicious of such a conclusion.

The most important argument against a diphthongal jʉ is the fact that it may not occur after word-initial consonant clusters — except of course the notorious s-initial ones. So *spew* spjʉw and *skew* skjʉw are available, but *blew* is blʉw, not *bljʉw, even for speakers who otherwise would have a cluster in, for example, *lewd* ljʉwd. This indicates that the yod following a consonant is itself also a

[4] Since the quality difference between the vowels of LOT and THOUGHT, ɔ vs oː, on the one hand, and TRAP and PALM, a vs ɑː, on the other, is predictable from the length of the vowel, we ignore it here. This limits the number of distinctive vowels in British English to six: KIT, DRESS, TRAP, STRUT, LOT, and FOOT, ie ɪ ɛ a ə o ʉ, respectively. It is these six vowels that appear in (2).

consonant, it is part of the onset, the length of which is limited to two — again, if we exclude s-initial clusters.

These peculiarities of the distribution of Cj in English follow from the historical development of words containing this cluster. This is what we briefly look at in the next section.

2 The source of Cj in English

Old English did not have Cj clusters, although it did have Cl, Cr, and Cw, even Cn, but the latter have simplified to n (OE *hnut* is *nut* in Modern English). The majority of Cj clusters in present-day English come from two Middle English diphthongs and from French loanwords (Minkova 2014). Some examples are shown in (3).

(3) a. ME iw, eg *new, Tuesday*
b. ME ew, eg *dew, brew*
c. F yː, eg *due, sure*

Middle English iw and ew merged and the syllabicity of the resulting diphthong swapped from the first to the second element in most accents of English (not in Wales varieties of English;[5] Penhallurick 2004 : 107f). That is, the falling diphthong iw became a "rising diphthong" juː. Note that the vowel part of juː is long, ie bimoraic, just like its source, iw. Since Old English yː has unrounded to iː, as in *mice* (also short y to i, as in *fill*), by the time French loans with yː and y were adopted in English this vowel was gone in earlier words, so it was broken into its components, i and u. Only long yː had the two moras that could accommodate both parts, the resulting vowel has merged with juː. The short y of French loans could not preserve both labiality and palatality, it has lost the latter property and was adopted as short u in English, and in many accents later unrounded and lowered with it: eg *buzzard, culprit, just.*

Since there was no restriction on the consonant — or, in fact, consonant cluster — occurring before iw, ew, and yː, it came to be a unique property of yod that its occurrence after consonants is not limited by sonority: it occurs after voiced fricatives and sonorant consonants too.[6] What excludes some Cj clusters is the ban

[5] Since this vowel is still a diphthong here, its palatal component remains in *blew* bliw.

[6] Unlike the other glide, w, which does not occur after sonorants. For speakers who still retain word-initial hw (eg in *what*) it does. One reason for not taking h to be an obstruent is the simplification of OE hl, hr, and, for many, hw.

on homorganicity (cf (1c)): yod does not occur after palatals and postalveolars, eg in *chew, Jude, rule.*

Before consonant+unstressed vowel and before word-final r, unstressed juː has reduced to jə (eg *regular* rɛ́gjələ, *tenure* tɛ́njə). In British English stressed uː has lowered before r (eg *cure* kjoː), even unrounded for some speakers (eg *cure* kjəː), and split into a fronter and a backer vowel, the latter occurring before nonprevocalic l (eg *mule* mjuwl vs *mute* mjʉwt). These developments have led to a larger set of vowels after Cj clusters.

Let us now look at the constraints on the consonants before yod in English.

3 Consonants before yod

Some of the variation in the range of consonants that do and do not occur before yod is well known (eg many Americans would pronounce *new tune* as *noo toon*, that is, nʉw tʉwn instead of njʉw tʃʉwn, and have *due* and *do* as homophones, whereas for British speakers *due* is usually homophonous with *Jew*). The following chart compares five varieties of English. On one side of the scale is Welsh English, in which the palatal element is preserved in all environments, obviously because it is manifested by a vowel. For the sake of uniformity, we will nevertheless represent this palatality by j in this chart. The other end of the scale is East Anglian English, where the palatal element is lost in all environments (Trudgill 2004 : 175f). Between the two is British and American English. We are experiencing changes in this area in Standard British English currently, so two varieties are included, a more traditional one labelled as RP and a more advanced one called Current British English (CUBE). These three varieties show that the distribution of postconsonantal yod primarily depends on the place of the preceding consonant.

The words in (4e) show that the consonantal yod cannot be retained after consonant clusters — as has already been mentioned. It is noteworthy that the s-initial clusters are exceptional (eg *slew* slʲʉw,[7] *spew* spjʉw, *smew* smjʉw). Yod is also missing after palatal and postalveolar consonants, as shown in (4c). English does not provide phonological evidence for distinguishing palatal and postalveolar as different places of articulation, in fact, the term palatalization is used to refer to an alveolar (t d s z) becoming *postalveolar* (tʃ dʒ ʃ ʒ, respectively). So we can safely merge the two groups under the label palatal. Classic RP retains the

[7] Those who pronounce *slew* as slʉw also pronounce *lewd* as lʉwd, ie they omit the yod after any l, not only after a cluster ending in l.

(4)			WelshE	RP	CUBE	GenAm	EAnglia
a.	pure	p	j	j	j	j	∅
	beauty	b	j	j	j	j	∅
	few	f	j	j	j	j	∅
	music	m	j	j	j	j	∅
b.	Tuesday	t	j	j	tʃ	∅	∅
	duke	d	j	j	dʒ	∅	∅
	new	n	j	j	j∼∅	∅	∅
	thuja	θ	j	j	j∼∅	∅	∅
	lewd	l	j	j	∅	∅	∅
	slew	sl	j	j	∅	∅	∅
	assume	s	j	j	ʃ∼∅	∅	∅
	presume	z	j	j	ʒ∼∅	∅	∅
c.	parachute	ʃ	j	∅	∅	∅	∅
	chew	tʃ	j	∅	∅	∅	∅
	Jew	dʒ	j	∅	∅	∅	∅
	rule	r	j	∅	∅	∅	∅
	yew	j	j	∅	∅	∅	∅
d.	cube	k	j	j	j	j	∅
	gue	g	j	j	j	j	∅
	hue	h	j	j	j	j	∅
e.	blew	bl	j	∅	∅	∅	∅
	glue	gl	j	∅	∅	∅	∅
	flew	fl	j	∅	∅	∅	∅
	true	tr	j	∅	∅	∅	∅
	crude	kr	j	∅	∅	∅	∅

historical yod in all other contexts, ie after singleton nonpalatal consonants and after s-initial clusters.[8]

American varieties often go much further in eliminating yods: it is omitted not only after palatals, but after any coronal consonant, as shown in (4b). It is rather difficult to motivate this pattern with homorganicity, because that would also entail the simplification of clusters with r and l (cf Törkenczy 2008), which apparently does not occur in adult speech. What is more, we will shortly see that not all alveolar + yod clusters are simplified in General American, so whatever

[8] There is no swj, but there is no wj either. There is also no snj. There simply was no input for these clusters in Middle English or French.

(5)

			RP	CUBE	GenAm
a.	copula	p	j	j	j
	nebula	b	j	j	j
	crofula	f	j	j	j
	amulet	m	j	j	j
b.	botulin, nature	t	j/tʃ	tʃ	tʃ
	module, procedure	d	j/dʒ	dʒ	dʒ
	monument	n	j	j	j
	Matthew	θ	j	j	j
	cellular	l	j	j	j
	insular, pressure	s	j/ʃ	j/ʃ	∅/ʃ
	lazulite, closure	z	j/ʒ	j/ʒ	∅/ʒ
c.	brochure	ʃ	∅	∅	∅
	Quechua	tʃ	∅	∅	∅
	injure	dʒ	∅	∅	∅
	virulent	r	j∼∅	j∼∅	j∼∅
d.	accurate	k	j	j	j
	argument	g	j	j	j
e.	plurality	pl	∅	∅	∅
	influence	fl	∅	∅	∅
	altruist	tr	∅	∅	∅
	congruous	gr	∅	∅	∅

cause we construe for this type of yod-dropping, a well defined set of environments will have to be exempted from it.

Some variation within a single variety is shown for Current British English in (4). Here we see that simple omission is not the only way of getting rid of a postconsonantal yod. Obstruents often fuse with yod, the result of which is that the yod disappears (at least from our transcriptions which use discrete symbols for "individual segments"), but palatality remains. Note that this process has been going on for centuries in English, yielding some lexicalized palatalizations, where only etymology (or spelling, the poor man's etymological database) tells us what happened, like in *sugar* ʃʉ̟gə, *sure* ʃɔ́ː, or *mature* mətʃɔ́ː.

The distribution of postconsonantal yod described so far is only partial, it holds for yod before a stressed vowel. Before an unstressed vowel, we find a somewhat different picture. This is shown in (5). We cannot use word-initial clusters this time, since unstressed syllables containing CjV appear not to exist at the beginning of words. The two "extreme" accents, Welsh and East Anglian

English, have been omitted this time, since they do not provide any novelty, their stressed and unstressed syllables are alike.

As for the other three accents, there is no difference after noncoronal consonants, (5a, d) and non-s-initial clusters, (5e). In the other two environments we see more palatality before unstressed than before stressed vowels. We have seen that in a stressed syllable yod does not occur after r in any of these varieties of English. This makes r pattern with palatals/postalveolars, (5c). Before an unstressed vowel, however, some speakers have the yod in the few examples that contain this environment, like *virulent, erudite, pulverulent, querulous,* or *ferrule.*[9]

The differences between these three varieties in the distribution of yod after an alveolar consonant[10] are almost all gone in (5b). We see that palatality is almost always present in this case, either as yod proper, or as a palatalized obstruent. In the latter case we know that the ʃ, ʒ, tʃ, dʒ of *pressure, pleasure, virtue, module* were Cj clusters earlier only from morphologically related alternants (like *press, please*) or, of course, from the spelling, ie etymology of these words. The generalization is valid in any case: in unstressed syllables that contained an earlier jʉ the palatal element is only absent after clusters, as in (5e).

So far we may conclude that the relative lack of constraints between yod and a preceding consonant, (1d), and the presence of constraints on yod and the following vowel, (1e), as compared to other consonant plus sonorant clusters, is the result of a historical development: the yod in Cj clusters was "part" of the following vowel in an earlier stage of English. We now turn to (1f): the difference we observe between stressed and unstressed syllables.

4 The role of stress

In English the consonantal position before a stressed vowel is "stronger" than that before an unstressed vowel. Here we do not pursue why this is so, but refer the interested reader to Harris (1997) or Scheer & Ségéral (2001). For our purposes it is enough to assert that the type of clusters discussed in this paper are in a more favourable position before a stressed than before an unstressed vowel. This

[9] Since this is the only consonant of this group that may allow yod to follow it, even if only before an unstressed vowel, one may be tempted to reclassify it with alveolars, so that it can be maintained that these two consonants must not be homorganic. However, r may palatalize the preceding alveolars (eg *disregard* dɪʃrəgaːd, *string* ʃtrɪŋ), like yod (eg *stupid* ʃtʃʉwpəd, *misuse* mɪʃjʉwz).

[10] Let it be admitted that we are glossing over the fact that θ is not alveolar, but dental. This does not make it very different from the rest of this group.

difference is not categorical though: consonant + approximant clusters occur both before stressed and unstressed vowels, but with different frequency.

The figures in (6) illustrate this fact. The data are based on the CUBE searchable online pronunciation dictionary (http://cube.elte.hu), containing 103 000 entries. The numbers indicate the number of entries containing the given string, potentially several times (like in *program*). We cannot always unambiguously separate stressed from unstressed vowels in this resource, so we compare all prevocalic with preschwa sequences — excluding both STRUT and GOAT from our definition of schwa. A further distorting factor is syncope, which occurs before unstressed vowels, hence creating consonant + approximant clusters of the type examined here before schwa: eg *interest* ínt(ə)rəst, *lateral* lát(ə)rəl, etc. But even with these cases, the figures of preschwa Cr, Cl, and Cw is around 10% of all the occurrences of these clusters, as shown in (6). Note the relatively much higher ratio of preschwa Cj.

(6)

	__ ə	__ V	ratio
Cr __	2263	16510	14%
Cl __	1061	10274	10%
Cw __	339	3433	10%
Cj __	1210	3596	34%

The figures in (7) show the occurrence of all consonants in word initial or postvocalic — that is, not postconsonantal — position. We see that these ratios are generally at least twice as large. This means that a Cr, Cl, Cw cluster is only half as preferable before schwa as either of the members of the cluster.

It is noteworthy that two sets of consonants stick out of the general picture: compared to other consonants voiced fricatives, ʃ, and ŋ are far more common before schwa, while the glides are vanishingly rare in this position. We know that in Old English voiced fricatives were the foot-internal variants of fricatives, foot initially their voiceless counterparts occurred. In other words, a voiced and a homorganic voiceless fricative were allophones (Minkova 2014 : 88ff). Apparently, this historical fact can still be detected in the phonotactic trends of English. A similar explanation holds for ŋ, which is impossible prevocalically in some accents of English to this day (cf Wells 1982 : 365f, Clark 2004 : 139).

The fact that glides are almost absent before schwa is an artefact of a prevalent tradition which interprets vowel+glide sequences as diphthongs in English. If we include diphthongal offglides in our calculations, that is, if we count the glides in *lion* lájən and *vowel* váwəl as glides proper, we get the results shown in (8).

(7)

	___ ə	___ V	ratio
l ___	3980	15232	26%
r ___	3144	15595	20%
j ___	17	840	2%
w ___	67	3477	2%
h ___	117	4474	3%
p ___	2127	9127	23%
t ___	4319	13394	32%
k ___	4196	13030	32%
b ___	2245	8927	25%
d ___	1991	10063	20%
g ___	1270	4152	31%
tʃ ___	337	1719	20%
dʒ ___	735	3668	20%
f ___	1019	6493	16%
θ ___	250	1210	21%
s ___	2529	11753	22%
ʃ ___	3388	5241	65%
v ___	2262	5613	40%
ð ___	404	541	75%
z ___	1422	3383	42%
ʒ ___	240	356	67%
m ___	3325	12571	26%
n ___	3452	11400	30%
ŋ ___	146	204	72%

(8)

	___ ə	___ V	ratio
j ___	6211	9943	62%
w ___	1082	5592	19%

This lets w join the group of regular consonants, with ratios ranging from f's 16% to t's 32%. The high ratio of preschwa j is a result of words in ɪjə (eg *alien* ɛ́jlɪjən), without this pattern, the ratio is down to 14%.[11]

[11] not that there is any reason to exclude ɪjə from our calculations

Even if we do not compare clusters to singleton consonants, the high ratio of preschwa Cj in (6) compared to other clusters — 34% against 10–14% — requires an explanation. This is what we will now attempt to give.

5 High vowel gliding

Let us recall, in §2 we saw that Cj clusters of present-day English are reflexes of two Middle English diphthongs and French loans containing long yː, as shown in (3), repeated in (9a–c) for convenience. (9d–f) complete the sources of Cj in English.

(9) a. ME iw, eg *new, Tuesday*
b. ME ew, eg *dew, brew*
c. F yː, eg *due, sure*
d. high vowel gliding, eg *million, opinion, Slovakia*
e. loanwords, eg *banyan, canyon, cognac, fjord, piano, pinyin*
f. morpheme concatenation, eg *churchyard, egg yolk, light-year*

(9e, f) are mentioned only to make the list exhaustive; note that in loanwords, the yod can be followed by vowels other than ʉ, o, or ə (*cognac* kónjak, *pinyin* pínjɪn), and, of course, any consonant — even a palatal — can precede the yod across a word boundary, and any vowel can follow it, as is the case for word-initial yod.

The most productive source of word-internal Cj clusters in English currently is high vowel gliding (HVG), illustrated in (9d). HVG is a case of syncope. Syncope is most likely in English if an unstressed vowel (namely schwa) is followed by a singleton sonorant consonant which in turn is followed by another unstressed vowel (eg *literal* lítʲərəl, *catholic* káθʲəlɪk).[12] Syncope is blocked if the second vowel of this string is stressed (eg *iterate* ít*ʲərɛ̀jt, *catholicity* káθ*ʲəlísətɪj). Syncope is also sensitive to the cluster preceding the syncopated vowel: this may be a falling-sonority cluster (eg *adultery* ədə́ltʲərɪj, *company* kə́mpʲənɪj), a level-sonority cluster, involving two obstruents, which we here take to be of equal sonority (eg *victory* víktʲərɪj, *history* hístʲərɪj, *excellent* é́ksʲələnt), but not a rising-sonority cluster (eg *burglary* bə́ːglʲ*ərɪj). Examples like *tolerant* tólʲərənt prove that the cluster is to blame for the impossibility of syncope in *burglary*, not the l and r around the schwa to undergo syncopy.

In HVG the sonorant consonant after the syncopated vowel is restricted to glides and the syncopated vowel is an unstressed high vowel (ɪ before j and ʉ before w), but the rest of the phenomenon is identical, the constraints hold in

[12] The judgements on where syncope (including HVG) is possible come from Wells 2008.

exactly the same manner. So HVG occurs before an unstressed vowel (eg *million* mílʲjən, *mania* mḗjnʲjə, *graduate* grádʒʲ̫wət), but not before a stressed vowel (eg *humiliate* hjʉwmíl*ʲjɛ̀jt, *maniac* mḗjn*ʲjàk, *graduate* grádʒ*ʲ̫wɛ̀jt).[13] As before, the cluster preceding the syncopated vowel may show a falling sonority profile (eg *champion* tʃámpʲjən, *Albion* álbʲjən), or a level sonority profile (eg *axiom* áksʲjəm, *Caspian* kásspʲjən, *Actium* áktʲjəm, *Sogdian* ságdʲjən), but again, clusters with a rising sonority profile may not be followed by HVG (eg *atrium* ɛ́jtr*ʲjəm, *Cypriot* sípr*ʲjət, *nuclear* njʉ́wkl*ʲjə). And just like for syncope "proper", if r and l are not part of a rising-sonority cluster, HVG is possible: *area* ɛ́ːrʲjə, *Lilian* líl/jən. HVG involving ʉw is much rarer than that involving ɪj, as seen in (10). This is because unstressed ʉw is preceded by palatality, often in the guise of an explicit yod, which creates a rising-sonority cluster (eg *annual* ánjʉwəl), which — as we have just seen — inhibits HVG. When this palatality is incorporated in the preceding obstruent, HVG is available (eg *actual* áktʃʲ̫wəl).

The data in (10) give absolute numbers of sequences that *may* undergo syncope (or HVG).[14] These figures are only approximate: the vowel following the approximant is always schwa here (although it could also be unstressed ɪ), and we examine only those environments that may allow syncope, that is, which either have no cluster before the syncope site, or have a falling-sonority (RC)[15] or an obstruent+obstruent (TT) cluster, after which — as we have seen — syncope may occur.

(10)

	VC __ ə	RC __ ə	TT __ ə	sum
ər	395	290	104	789
əl	121	93	25	239
ɪj	891	2688	182	3761
ʉw	86	30	67	183

We see that there are relatively many potential inputs for HVG that result in a Cj cluster. Since HVG, like any other case of syncope, occurs predominantly before an unstressed vowel, furthermore in many cases syncope/HVG creates Cj, there are many instances of Cj clusters before an unstressed vowel. As we have

[13] The word *milliard* mílʲjàːd appears to behave exceptionally.

[14] We did not check each and every of these cases if they really do.

[15] There are less instances of VC than of falling-sonority clusters before ɪj, because diphthongal offglides and the second part of long vowels are counted as sonorant consonants. While this may distort the ratio of the first two columns, it does not influence the sum in the last column.

seen syncope/HVG-created Cj clusters (like *Tenniel* tɛ́n/jəl) are remarkably similar to "lexical" ones (like *tenure* tɛ́njə), except that the former only occur before an unstressed vowel, while the latter is three times as frequent before a stressed vowel, as shown in (6). But the comparison in (6) also reveals that other "lexical" C+approximant clusters are much less frequent before an unstressed than before a stressed vowel. We contend that this asymmetry in the phonotactic patterning of English is due to the fact that syncope/HVG produces a pattern that supports "lexical" Cjə. Speakers do not drop the j in *tenure* tɛ́njə, because it is identical to the result of HVG in a hypothetical form *tenia* tɛ́n/jə. Because this pattern is relatively common, "lexical" Cj clusters are also acceptable before an unstressed vowel.

Approximants other than j do not need the support provided by syncope/HVG-created clusters (and, as the figures in (10) suggest, this support would be much weaker anyway), since these clusters do not show any sign of simplification in English, neither before unstressed, nor before stressed vowels. Cr, Cl, Cw clusters are stable, unlike Cj clusters — as we have shown in §3.

6 Conclusions

We have shown in this paper that Cj clusters in English pattern differently than other consonant + approximant clusters in several respects. The consonant before yod may not only be a plosive or a voiceless fricative (like that before r, l, and w), but also a voiced fricative (eg *view* vjʉw) or a sonorant (eg *mute* mjʉwt, *hue* hjʉw). The range of vowels occurring after a Cj cluster on the other hand is more limited, it may be ʉ (as above), u (eg *mule* mjuwl), o (eg *cure* kjoː), or ə (eg *accurate* ákjərət). We have argued that both of these oddities are due to the fact that the yod of Cj clusters has developed from earlier diphthongs or long yː, which had not been constrained with respect to the preceding consonant in any way.

The other peculiarity of Cj clusters was their significantly higher frequency before schwa, as compared to other consonant + approximant clusters. To explain this distribution, we have shown that the most abundant current source of Cj clusters, high vowel gliding, occurs almost exclusively before schwa. Therefore, the large number of words containing Cjə lend support to the retention of preschwa Cj also in those cases where it is "lexical", ie where it developed from a historical diphthong or long yː. This kind of support is only relevant in the case of Cj clusters, since the other approximants are not subject to loss after consonants.

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