

Paradigm Structure in French Verbal Inflection

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Abstract

Verb inflectional morphology in French exhibits a range of complexities both in the structure of verb stems (stem-final latent consonant as in /par^t-part/; vowel variation as in /ʒəte-ʒet/; stem-final nasal vowel as in /pɛ̃-peɲ/; suppletive forms as in /vəni^r-viĕ̃/; etc.) and the organization of the inflectional system, marked for five grammatical categories: tense, (aspect), mode, person and number, which in the majority of cases cannot be identified as a morphological or phonological unit. The main objective of this paper is to show that these morphosyntactic properties should be analyzed as a global affix, which operate within the same space, with no fixed order. This strategy has the advantage to 1) take into account all the verb's syntactic properties, 2) avoid multiple zero suffixes, 3) avoid the use of different analyses depending on the verb class, 4) avoid non-productive and phonologically unmotivated rules of insertion of theme vowels as in [dɔrm-i-r-ɔ̃] *dormirons*, and epenthetic consonants as in [ku-d-r-ɔ̃] *coudrons*, 5) account for French verb inflectional system in a simple and more explanatory way than strictly segmental analyses without “motivated” processes, using massive suppletion and/or stem dependencies, where inflected verbal forms are related by arbitrary implicational associations or quantitative measures based on extensive memorization, 6) provide a system in which paradigm structure in French verbal inflection is very regular, and 7) ensure a more natural and unified analysis. This analysis also has the property of explaining by means of a very general principle the realization of a stem final floating

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consonant (FC) in front of the affixes /jɔ̃/ and /je/ as in front of any suffix beginning with an empty onset. The verb inflectional paradigmatic structures will be captured within Construction Morphology (CxM) as stated in Booij (2010) and Jackendoff & Audring (2018).

Keywords: French verbs. TAM. Global affix. Floating consonant. Phonological constraint. CxM.

La structure des paradigmes flexionnels dans le système verbal du français

Resumen

La flexion verbale en français présente un certain nombre de complexités à la fois dans la structure des radicaux verbaux (consonne latente en fin de radical comme dans /par^t-part/; variation vocalique comme dans /ʒəte-ʒet/; variation voyelle nasale/orale comme dans /pɛ̃-peɪ/; des formes supplétives comme dans /vəniɾ-vjɛ̃/; etc.), et aussi dans l'organisation du système flexionnel, qui est marqué par cinq catégories grammaticales : temps, (aspect), mode, personne et nombre, et qui sont, dans la majorité des cas, non isolables sous formes de suffixes propres. L'objectif principal de cette étude est de montrer que ces propriétés morphosyntaxiques devraient être analysées comme un suffixe global, où elles opèrent dans un même espace et de façon non ordonnée. Cette stratégie a l'avantage 1) de rendre compte de toutes les propriétés morphosyntaxiques, 2) d'éviter de poser de multiples suffixes zéro, 3) d'éviter une analyse différente selon le type de classe verbale, 4) d'éviter le recours à des règles non productives et phonologiquement non motivées d'insertion de voyelles thématiques (ex. : [dɔ̃rm-i-r-ɔ̃] *dormirons*) et d'insertion de consonnes épenthétiques (ex. : [ku-d-r-ɔ̃] *coudrons*), 5) de rendre compte du système flexionnel verbal du français de

manière simple et plus explicative que les analyses strictement segmentales sans processus “motivés”, qui recourent à une supplétion massive, ou à une analyse de dépendance, où les formes verbales fléchies sont reliées par des associations implicatives arbitraires, ou encore des mesures quantitatives basées sur une mémorisation extensive, 6) de fournir un système où la structure paradigmatique verbale est très régulière, et 7) de proposer une analyse plus naturelle et unifiée. Cette analyse a également l’avantage d’expliquer au moyen d’un principe très général la réalisation d’une consonne flottante (CF) finale de radical devant les suffixes /jɔ̃/ et /je/ comme devant tout suffixe commençant par une attaque vide. Les structures paradigmatiques flexionnelles seront exemplifiées dans le cadre de la Morphologie de Construction (CxM), tel que posé dans Booij (2010) et Jackendoff & Audring (2018).

Mots clés : Morphologie verbale du français. TAM. Suffixe global. Consonne flottante. Contraintes phonologiques. CxM.

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Introduction

French verbal inflection has received a revived interest in the past two decades in formal linguistics as well as in psycholinguistics research. A recurrent issue is the contrasting regular-irregular verb classes and the representation of the patterns of regularity and irregularity in the French verbal paradigms. Two distinct approaches are competing to account for the regularity and the degree of allomorphy of the verb form inflection, which displays stem vocalic alternation in 1st conjugation verbs ending in *-er* like [ap(ə)lɔ̃-apɛl] *nous appelons/ils appellent* of the verb *appeler* ‘to call: we/they call’, and stem final latent consonant (LC)¹ as in [fini-finis] of *finir* ‘to finish’, [dɔ̃r-dɔ̃rm]² of *dormir* ‘to sleep’, observed in 588 (non-defective, non-suppletive) French verbs of the traditional 2nd and 3rd conjugation:

1) The linear approaches, which deny any type of phonological conditioning of the C/Ø alternation, analyze the presence of LCs either as an epenthetic segment or a suppletive form (i.e. the memorization of two or more stems); for example, the verb *finir* would have two forms: /fini, finis/ and *coudre* ‘to sew’, three forms: /ku, kuz, kud-r/.

2) The nonlinear approaches postulate one form and argue that the presence/absence of final LCs is phonologically predictable; it is caused by a universal phonological constraint, i.e. The No Empty Onset Principle, which constitutes a universal core: an obligatory subset of the CV bias encoded by Itô’s (1989) Onset Principle. It expresses the only universal manifestation of the constraint: *C\$V, where \$ is a syllabic boundary.

1 Latent consonants refer to the well-known consonant/zero (C/Ø) alternation found in many other morphological and syntactic environments of the French language (eg. *petit* / *petite* / *petitesse* / *petit ami* [pəti/pətit/pətitɛs/pətitami]) where a word can appear with two forms: a short form when followed by another word or suffix consonant initial and a long form when the following word or suffix is vowel initial.

2 For reasons of simplicity, the French uvular fricative [R, ʀ] is transcribed as /r/ in this paper.

(1) *No Empty Onset Principle*: (Paradis and El Fenne, 1995, p. 189)

(Universal within stems and bound-stem derivation).

An empty onset cannot be preceded* by a consonant, either floating or anchored.

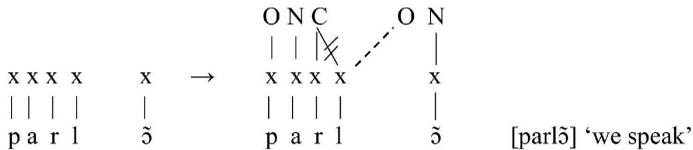
* Precedence is established on syntactic and morphological grounds.

Domain of activation of this principle in French: the whole lexicon and some syntactic domains.

In these models LCs are construed as floating consonants (FC)³ with regard to the skeleton. As sketched in (2a), the stem final permanent consonant (PC) is re-syllabified in the following empty onset, while (2b) indicates that once syllabified, the FC is assigned a timing unit (TU) by respect to the Node Generation Convention in (3).

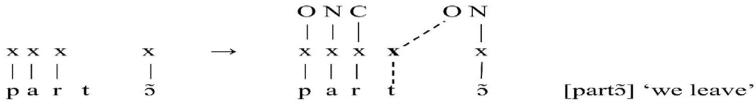
(2) Representation of verb stem final PC and verb stem final FC

a) *Underlying form: verb final PC /parl/*



³ FC refers to stem final consonant without a timing unit at the skeletal tier of the syllable. Cf. also Hyman (1985), Prunet [1986/1992], Paradis and El Fenne (1991, 1992, 1995), Zoll (1994), among others.

b) Underlying form: verb final FC /par^t/⁴



(3) Node Generation Convention (Archangeli and Pulleyblank, 1986, p. 75)



A rule or convention assigning some feature or node *x* to some node *b* creates a path from *x* to *b*.

Where P is a syllabic constituent and S, a segment.

In this vein, Paradis and El Fenne (1992; 1995) have demonstrated the necessity of the skeleton to account for the presence/absence of LCs in French verbal stems. The outcome of their analysis has brought a new insight to the partition of regular/irregular verb classes, i.e. French verbal stems are mainly divided into two large categories: those with final FC and

⁴ Superscript consonant in /part^t/ stands for a FC.

never select [-er] infinitive suffix and those with final PC, which constitute the vast majority of [-er] group (94% out of the 12000 French verbs) (cf. PARADIS; EL FENNE, 1995, p. 200). From this perspective, the derivation of verb inflectional paradigms is very regular, contrasting with the linear approach analyses which reject the morphophonological processes.⁵ This phenomenon of floating segments is not limited to French language, similar processes can be observed in Samoan, a Polynesian language, where final latent consonants alternate with Ø.⁶

(4) *FC in Samoan language* (HARRIS, 2011)

<u>Underlying</u> <u>Representation</u>	<u>without suffix</u> <u>Simple temps</u>	<u>with suffix</u> <u>Perfectif</u>	
/tanis/	tani 'weep'	tanis-is	'wept'
/inum/	inu 'drink'	inum-ia	'drunk'
/uluf/	ulu 'enter'	uluf-ia	'entered'
/apit/	api 'take'	apit-ia	'taken'
/saof/	sao 'collect'	saof-ia	'collected'
/itarj/	ita 'irritate'	itarj-ia	'irritated'

Along with Paradis and El Fenne (1992; 1995) and El Fenne (1994), stem final LCs in French verbal inflection are construed as FCs in this paper. This approach enables to 1) account for the C/Ø alternation in an effective and more explanatory way than linear analyses, 2) better understand the verb-internal morphological structure and 3) highlight the paradigmatic distribution of inflectional affixes.

The main objective of this paper is to investigate verb inflectional structure in French to show that the markers of Tense and Mode, which in the majority of cases cannot be identified as a morphological or phonological unit, should be analyzed

⁵ Nevertheless, the linear approaches like Kilani-Schoch and Dressler (2005), Bonami and Boyé (2007), Boyé (2011), have come to the conclusion that the derivation of verb inflectional paradigms of the 2nd verb conjugation seems to be even more regular than 1st group verbs, even if this latter is more productive and does not display LCs.

⁶ Cf. Prunet (1992) who maintains that latent consonants, which he analyzes as FC, are not limited to French and that this phenomenon can be observed in verbal stems in Maori. Also, Zoll (1994), for an analysis of the C/Ø alternation (and latent/floating segments, in general) in Chaha and Yawelmani, and for arguments in favor of the underlying representations.

as being inherent to the markers of Person and Number.⁷ For example, if we consider the 3rd plural (pl.) Imperfect (Imp.) Indicative (Ind.) *ils parlaient* ‘they have been speaking’ /parl-ε/, /parl/ is the verb basic stem and /ε/, the Tense marker of the 3pl. Imp. Ind.; there is no phonetic sign that shows the presence of any particular Mode, Person, or Number marker. Likewise, /jõ/, in /parl-jõ/ *nous parlions* ‘we have been speaking’, is the Tense marker of the 1pl. Imp. Ind. In reality, [ε] and [jõ] comprise various morphosyntactic information; therefore, these affixes should be analyzed as non-decomposable global affixes, where all the grammatical properties operate within the same space, with no fixed order. This strategy has the advantage to 1) take into account all the verb grammatical properties, 2) avoid resorting to a multitude of morphological rules to justify the absence of Tense, Mode, Person and Number markers in the many cases where these markers are not traceable phonetically or phonologically, and 3) account for French verb inflectional system in a simple and more explanatory way than strictly segmental analyses without “motivated” processes, using massive suppletion and/or stem dependencies, where inflected verbal forms are related by arbitrary implicational associations (MORIN, 1987; BLEVINS, 2006; BOYÉ, 2011; MONTERMINI; BONAMI, 2013), or an analysis based on unnatural phonological classes, using massive rules of insertion and conversion rules to justify the inflected forms within French verbal paradigms (KILANI-SCHOCH; DRESSLER, 2005); or quantitative measures based on extensive memorization (SEYFARTH *et al.* 2014; SIMS, 2015; BLEVINS, 2016). Furthermore, the combination of the grammatical morphosyntactic properties eludes the problematic

⁷ Aspect is not expressed as a specific morpheme in French; it is identified as a construction form (complex or simple form) of an inflected verb. More details about Aspect are presented in section 4.

morpheme variants and the challenged elements order.⁸ This approach is applied to French in this study but it could extend straightforwardly to other languages (cf. EL FENNE, 2018; 2020, on verbal system in Standard Arabic).

The paper is organized as follows: Section 2 investigates French verb inflectional structure; Section 3 discusses the distribution of the affixes [jɔ̃] and [je] of the 1pl. and 2pl. of the Imperfect Indicative, Present Subjunctive, Present Conditional, and explains why these markers should be analyzed as a blended affix, formed of a diphthong. Finally, Section 4 imparts the treatment proposed to account for the distribution of the grammatical morphosyntactic properties, i.e. Tense, Mode, Person and Number, in French verbal paradigms. The analysis is sketched within the model of Construction Morphology (CxM) as developed in Booij (2010), and Booij and Audring (2015), where morphological patterns are represented as constructional abstract schemas (cf. also, JACKENDOFF, 2002).

2 French verb's inflectional structure: proposal

Recall that the verbal inflected forms studied in this paper are based on Standard Spoken French, as normally used by educated persons in the francophone world. In other words, the tables of the verb inflectional paradigms presented in this section reflect the ideal language skills and do not report all the existing regional variations.

As indicated in Section 1, LCs play an important role in French inflectional morphology and are construed as FCs in

⁸ Cf. Chomsky (1965, p. 173), for a critical statement on affix order in terms of morpheme sequences, and the use of zero suffixes.

this study. The following subsections show that the distinction between PC and FC is essential to grasp paradigm structure in French verbal inflection.⁹ For space reasons, the analysis is only exemplified within three tenses of the Indicative Mode, i.e. Present, Imperfect and Future.

2.1 The Present Indicative

The classification of the inflected forms of the Pres. Ind. of the verbs *parler* ‘speak’, *finir* ‘finish’, *cuire* ‘cook’, *partir* ‘go’, *connaître* ‘know’, *coudre* ‘sew’, all of which have a single basic stem, is illustrated in tableau (5). The superscript consonant in the singular forms indicates the presence of a FC, and /*/ indicates that the inflected forms contain a suffix as a timing unit (TU), which cannot be isolated in this table because of the linear representation of the verbal forms.

(5) Examples of inflected forms of the Pres. Ind.

	<i>Parler</i>	<i>Finir</i>	<i>Cuire</i>	<i>Partir</i>	<i>Connaître</i>	<i>Coudre</i>
1sg	parl	fini ^s	kɥi ^z	par ^t	kɔnɛ ^s	ku ^z
2sg	parl	fini ^s	kɥi ^z	par ^t	kɔnɛ ^s	ku ^z
3sg	parl	fini ^s	kɥi ^z	par ^t	kɔnɛ ^s	ku ^z
1pl	parl- <i>ɔ̃</i>	finis- <i>ɔ̃</i>	kɥiz- <i>ɔ̃</i>	part- <i>ɔ̃</i>	kɔnɛs- <i>ɔ̃</i>	kuz- <i>ɔ̃</i>
2pl	parl-e	finis-e	kɥiz-e	part-e	kɔnɛs-e	kuz-e
3pl	parl	finis*	kɥiz*	part*	kɔnɛs*	kuz*

Tableau (5) indicates that the paradigm of the Pres. Ind. is based on the basic stem (root), and that the Pres. Ind. has no singular marking; the Tense markers of the 1pl. and 2pl. are /*ɔ̃*/

⁹ Of course, the verbs *être*, *aller*, *avoir* and *faire*, which also behave as modals, and which present a highly allomorphic stem variation, are analyzed as having suppletive forms because the alternations they display are not motivated morphologically or phonologically; thus, they must be learned.

and /e/, respectively; the 3pl has for Tense marker a TU (a bare x-slot), a suffix which associates to the stem final consonant if it is a FC (HYMAN, 1985; EL FENNE, 1994; PARADIS; EL FENNE, 1995); this suffix is responsible for the realization of a FC in the 3pl. Pres. Ind., and is formalized in (6):

(6) Morphophonological rule of the 3pl Pres. Ind.

$$\begin{array}{ccc} \emptyset & & \mathbf{x} \\ & \rightarrow & | \\ \mathbf{C} & & \mathbf{C} \end{array}$$

Thus, Pres. Ind. displays three suffixes: /ʒ/, /e/ and a TU.

1pl → /jʒ/

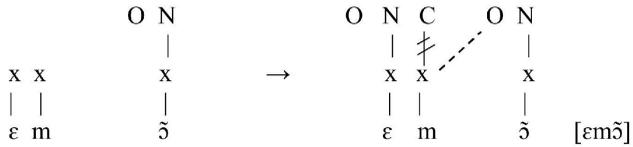
2pl → /je/

3pl → a TU

elsewhere, the Pres. Ind. is unmarked.

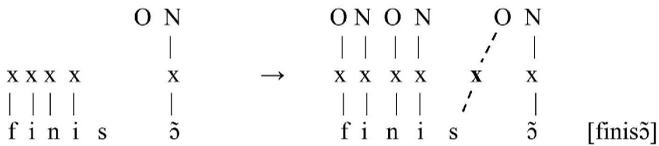
As sketched in (7), (8) and (9), the verbal forms of the type /em-ʒ/ *nous aimons*, *aimer* ‘we love’, /finis-ʒ/ *nous finissons*, *finir* ‘we finish’, /part-ʒ/ *nous partons*, *partir* ‘we leave’ and /kuz-ʒ/ *nous cousons*, *coudre* ‘we sew’ are analyzed as being formed with a stem and a suffix.

(7) *Aimons, 1pl Pres. Ind.*

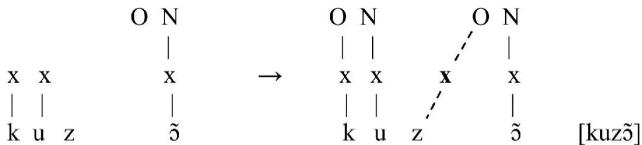


The structure in (7) shows that the last consonant of the stem /m/ is resyllabified in the empty onset of the suffix /ɔ̃/. Here, as elsewhere, this resyllabification is analyzed as a repair strategy (cf. PARADIS, 1988a, 1988b) which serves to preserve the Onset Principle. Recall that this principle does not allow empty onsets to be preceded by a consonant, whether it is permanent as in (7) or floating as in (8) and (9).

(8) *Finissons, 1pl Pres. Ind.*



(9) *cousons, 1pl Pres. Ind.*



The realization of the FC in the 3pl. of the verbs presented in (10a,b) is a result of the morphophonological rule of the 3pl. Pres. Ind. presented in (6), which associates a TU to the stem final FC.

(10a) *Finir (il finit, ils finissent)*

<i>UR</i>	<i>3sg</i>	<i>3pl</i>
x x x x	x x x x	x x x x x
f i n i s	f i n i ø [fɛni]	f i n i s [finis]

b) coudre (il coud, ils cousent)

<i>UR</i>	<i>3sg</i>	<i>3pl</i>
x x	x x	x x x
k u z	k u ø [ku]	k u z [kuz]

As it can be observed, the display of FC in verbal stems is very regular. Without the notion of FC and the underlying representations, it would be arduous to account for the C/Ø alternation unless one uses costly mechanisms such as epenthesis or suppletion, which both imply massive memorization (cf. BONAMI; BOYÉ, 2007; KILANI-SCHOCH; DRESSLER, 2005; BOYÉ, 2011; MONTERMINI; BONAMI, 2013; ESTIVALET; MEUNIER, 2016, among others).

2.2 The Imperfect Indicative

As for the Pres. Ind., the inflected verbs of the Imp. Ind. are formed with a single basic stem and the inflectional affixes as

illustrated in (11).

(11) *Examples of inflected forms of the Imp. Ind.*

	<i>Parler</i>	<i>Finir</i>	<i>Cuire</i>	<i>Partir</i>	<i>Connaître</i>	<i>Coudre</i>
1sg	parl-ε	finis-ε	kɥiz-ε	part-ε	kɔnɛs-ε	kuz-ε
2sg	parl-ε	finis-ε	kɥiz-ε	part-ε	kɔnɛs-ε	kuz-ε
3sg	parl-ε	finis-ε	kɥiz-ε	part-ε	kɔnɛs-ε	kuz-ε
1pl	parl-jɔ̃	finis-jɔ̃	kɥiz-jɔ̃	part-jɔ̃	kɔnɛs-jɔ̃	kuz-jɔ̃
2pl	parl-je	finis-je	kɥiz-je	part-je	kɔnɛs-je	kuz-je
3pl	parl-ε	finis-ε	kɥiz-ε	part-ε	kɔnɛs-ε	kuz-ε

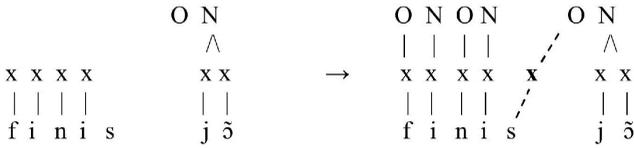
Stem final FCs are naturally realized with respect to the Onset Principle since the inflectional suffixes have an empty onset. Thus, the system proposed in this paper includes three suffixes: /jɔ̃, je, ε/.

1pl → /jɔ̃ /
 2pl → /je/
 elsewhere, /ε/.

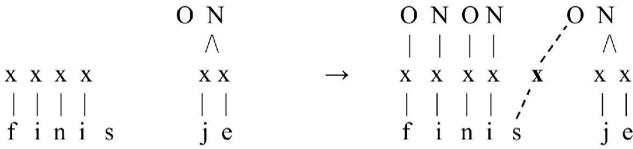
The fact that the suffixes /jɔ̃/ and /je/ of the 1pl. and 2pl. contain a diphthong¹⁰ is crucial, otherwise we won't be able to explain, among other things, the realization of a FC in the end of verbal stems. Configurations (12) and (13) show that the suffixes [jɔ̃] and [je] constitute each one the nucleus of a syllable with an empty onset; this constrains the stem final FC to anchor to the empty onset, and thus allows it to be realized.

¹⁰ A diphthong is a combination of two adjacent vowels within the same syllable; also, known as a gliding vowel.

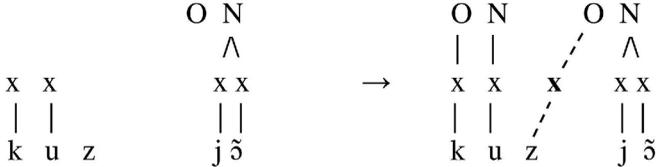
(12)a) *1pl Imp. Ind. /fini^s-jɔ̃/* [finisjɔ̃]



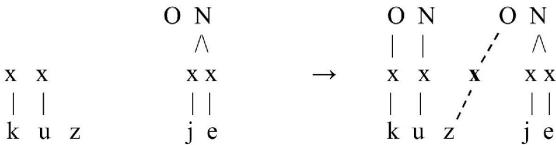
(b) *2pl Imp. Ind. /fini^s-je/* [finisje]



(13)a) *1pl Imp. Ind. /ku^z-jɔ̃/* [kuzjɔ̃]

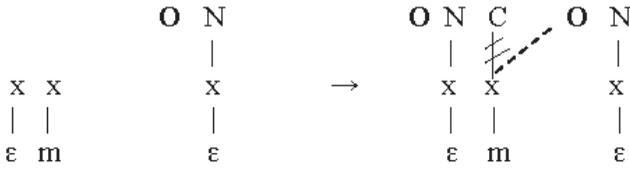


b) *1pl Imp. Ind. /ku^z-je/* [kuzje]

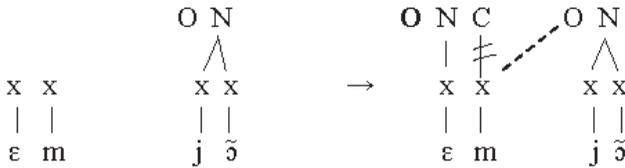


Here as elsewhere, the anchoring of a final consonant, be it floating as in (12) and (13) or permanent as in (14), to the empty onset of the suffixes /jɔ̃, je, ε/ takes place according to the Onset Principle.

(14)a) *sg and 3pl Imp. Ind. /εm-ε/ [εmε]*



b) *1pl Imp. Ind. /εm-jδ/ [εmjδ]*



2.3 The Future Indicative

The Future Tense is problematic for models which posit one suffix */-r/*¹¹ (cf. SCHANE, 1968; VAN DEN EYNDE; BLANCHE-BENVENISTE, 1970; GERTNER, 1973; MORIN, 1987; KILANI-SCHOCH; DRESSLER, 2005, among others) since they have to resort to a collection of rules of insertion/epenthesis of thematic vowels and epenthetic consonants to account for */ə/* in [parləra] *parlera*, */i/* [finira] in *finira* and [dɔrmira] *dormira*, */d/* in [kudra] *coudra* and [pɛdrə] *perdra*, */t/* in [kɔnɛtra] *connaitra*, etc.

In this paper, the Fut. Ind. is simply based on the Infinitive form.¹²⁻¹³ This perspective allows easily to account for the

11 In these analyses, the Future marking */r/* is different from the one of the Infinitive forms.

12 Cf. Paradis and El Fenne (1995) for a detailed analysis on French verb classes; they posit five Infinitive suffixes: */er/* as in /*jūt-e/ chanter*; */r/* as in /*finis-r/*, /*diz-r/*, /*pɛrd-r/*, *finir*, *dire*, *perdre*; */ir/* as in /*sət-ir/*, /*modis-ir/*, *sentir*, *maudire*; */Tr* (tr,dr) as in /*kɔnes-tr/*, /*bat-tr/*, /*kuz-dr/*, *connaitre*, *coudre*; */war/* as in /*dəv-war/*, /*tɔsəv-war/*, /*puv-war/*, *devoir*, *recevoir*, *pouvoir*.

13 See also Boyé (2011) and Estivalet and Meunier (2015) who indicate, though informally, that the Future tense is based on the Infinitive form, founding their analyses on psycholinguistic tests.

consonants /d/ and /t/ and the vowels /i/ and /ə/ present in the inflected forms of this tense; this is illustrated in tableau (15).

(15) *Examples of inflected forms of the Future Indicative*

	<i>Parler</i>	<i>Finir</i>	<i>Cuire</i>	<i>Partir</i>	<i>Connaître</i>	<i>Coudre</i>
1sg	parlər-e	finir-e	kɥir-e	partir-e	kənɛtr-e	kudr-e
2sg	parlər-a	finir-a	kɥir-a	partir-a	kənɛtr-a	kudr-a
3sg	parlər-a	finir-a	kɥir-a	partir-a	kənɛtr-a	kudr-a
1pl	parlər-ɔ̃	finir-ɔ̃	kɥir-ɔ̃	partir-ɔ̃	kənɛtr-ɔ̃	kudr-ɔ̃
2pl	parlər-e	finir-e	kɥir-e	partir-e	kənɛtr-e	kudr-e
3pl	parlər-ɔ̃	finir-ɔ̃	kɥir-ɔ̃	partir-ɔ̃	kənɛtr-ɔ̃	kudr-ɔ̃

Selkirk [1972]/(1980, p. 346) also puts forward that the forms of the future indicative and the present conditional are based on the infinitive and that “The first conjugation infinitive ending -er [e] appears as [əɾ] in pre-tonic position in the Future forms”. Thus, the inflected forms of the Future of verbs ending in -er are derived by means of a morphophonological rule, which changes /e/ to /ə/ in front of a stressed syllable as formalized in (16).

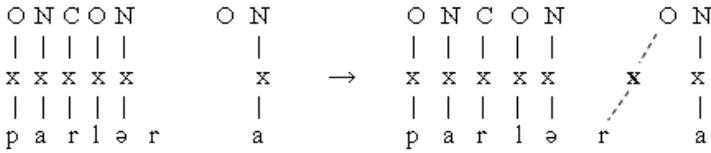
(16) *Infinitive morpheme reduction of verbs in -e^r*¹⁴

e → ə / __ CV (Future and Present Conditional)

Rule (16) usefully replaces the rule of insertion of a thematic vowel, found in most French verbal inflection analyses, in that it highlights the link between the nature of the vowel of the infinitive -er and the nature of the segment supposedly inserted. The application of this rule to verbs ending in -er activates derivations as in (17).

¹⁴ The presence of the floating /r/ of the verbs infinitive /-er/ is partially justified by its realization in context of liaison as in *adopter* □ *un enfant*, *mener* □ *un combat*, *traverser* □ *une crise*, etc., observed in neat talks (these examples are taken from Tranel (1981, p. 234); see also Morin and Kaye (1982), Encrevé (1988)).

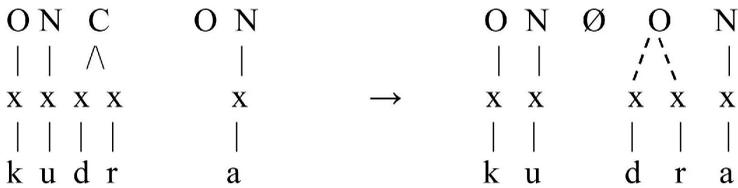
(17) *parler/il parlera* [parləra]



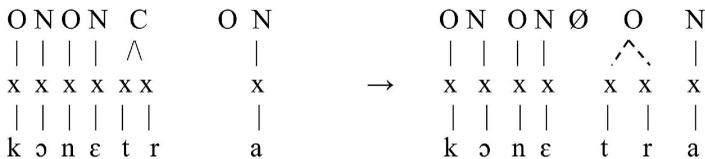
It is also asserted that schwa is subject to deletion when it is preceded by a single consonant since its onset can form a coda with the previous syllable; for example, /ɛm(ə)ra/ → [ɛm.ra] *il aimera* ‘he will like’.

The derivational structures of the Fut. Ind. in (18a,b) show that the final consonants /dr/ and /tr/ of the verbal theme, both are in onset position since if we posit /d/ or /t/ in coda position and /r/ in the empty onset, this configuration would constitute a bad syllabic contact in terms of sonority hierarchy.

(18) Derivational structure of the Future tense.



b) *connaître/il connaîtra* [kɔnɛtra] ‘know/he will know’

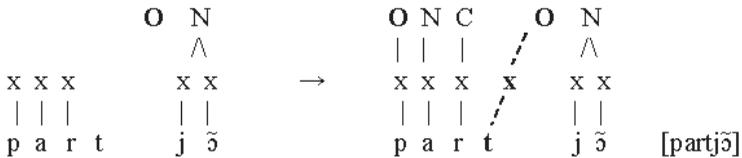


In this section, I have offered a description of French verbal inflectional system, basing my analysis on the notion of FC and the Onset Principle. This description is essential for the purpose of my analysis of the morphosyntactic properties distribution in French verbal paradigms, presented in Section 4.

3 The distribution of the affixes /-jɔ̃/ and /-je/ of the 1pl. and 2pl.

As already mentioned (cf. (12), (13)), the 1pl and 2pl /-jɔ̃/ and /-je/ inflectional suffixes of the Imp. Ind. are analyzed in this paper as one suffix, respectively, forming a diphthong. The realization of the FC is naturally justified, since the suffix /-jɔ̃/ constitutes a nucleus and, consequently, is preceded by an empty onset, as shown in (19).

(19) *Underlying form*



This analysis explains the realization of the FC in the empty onset of the suffix and, at the same time, confirms the hypothesis that there are only merged suffixes, which comprise the features of Tense, Mode, Person and Number. This is supported by the presence of diphthongs independently justified in French. In addition, the fact that the realization of a FC in front of the suffixes /jɔ̃/ and /je/ would be inexplicable if the glide in these suffixes was part of an onset.

Diphthongation is a natural and widespread phonological phenomenon. There are many arguments in favor of the presence of diphthongs in Standard French (cf. KAYE; LOWENSTAMM, 1984, on glides distribution: glides cannot appear in front of any vowel; the glide-vowel sequence is analyzed as a diphthong if it leads to the deletion of a definite article vowel as in *le oiseau* /lwazo/ ‘bird’ and *la huître* /lɥitr/ ‘oyster’ as opposed to *le whisky* /ləwiski/ ‘whisky’); *Liaison* phenomenon is another argument to assume that the glide-vowel sequence is a diphthong when it provokes an obligatory *liaison* (eg. *petit_oiseau* /pətitwazo/ ‘little bird’ versus *petit#whisky* /pətiwiski/ ‘little whisky’). *Liaison* in *petit_oiseau* is activated because the glide is part of the nucleus, which explains the realization of the final /t/ of *petit* in the next empty onset. On the other hand, *liaison* is blocked in *petit # whiskey* because, in this case, the glide occupies the onset position.

Another characteristic of diphthongs is that they are unbreakable even in pronunciation. For example, if we compare the verbal forms *louer* ‘praise’ and *fuir* ‘run away’, it appears that the first can have both pronunciations: /lue/ (slow speech) and /lwe/ (fast speech) while /fɥir/ can never be performed */fɥir/; similarly for words like /atãsjɔ̃/ ‘attention’ and /pje/ ‘foot’, which are never realized as */atãsi(j)ɔ̃/ and */pi(j) e). These examples argue in favor of the existence of diphthongs /jɔ̃/ and W independently of the case of our concern here.

In fact, the arguments in favor of the existence of diphthongs in standard French underpin the analysis of /-jɔ̃/ as a diphthong and make it plausible.

4 The distribution of grammatical morphemes in French verbal inflection: Paradigm structure and Construction Morphology CxM

This section explores the morphological distribution of French verbal inflectional suffixes. The purpose is to demonstrate that the combination of Tense, Mode, Person and Number Features within a single slot reveals the effective morphological mechanism of verbal inflection and ensures a more natural and unified analysis of French verbal system. The grammatical Aspect¹⁵ (encoded in the perfective ‘completed event’ / imperfective ‘ongoing event’) cannot merge with the other grammatical morphemes simply because, in French, Aspect does not have any specific morpheme; rather it is expressed as a construction form (simple vs complex),¹⁶ i.e. simple forms without auxiliary are related to the finite Tenses (imperfective, eg. *il dort, il dortait, il dormira* ‘he sleeps/ was sleeping/ will sleep’), and complex forms are formed with an auxiliary (have/be) followed by a past participle (perfective, eg. *Il a dormi, il avait dormi, il aura dormi* ‘he slept/ had slept/ would have slept’). This paper only deals with the imperfective aspect (simple forms), i.e. finite tenses (Ind. Present, Imperfect, Future, Conditional present, and Subjunctive present).

The analysis of French verbal inflection is sketched within the model of Construction Morphology (CxM) as developed in Booij (2010), and Booij and Audring (2015), where word formation patterns are represented as constructional abstract

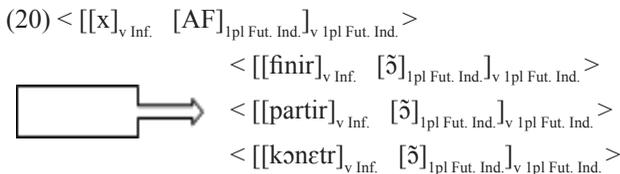
¹⁵ The notion of Aspect deals with the internal temporal constituency of actions, events, states, processes or situations (COMRIE, 1976). It is common to distinguish between grammatical aspect and lexical aspect (BINNICK, 1991). Also, grammatical aspect is subject to clear crosslinguistic differences (HAMM; BOTT, 2018).

¹⁶ For this reason, Aspect is quite often confused with Tense.

schemas /FORM/_[FUNCTION] ↔ ‘MEANING’,¹⁷ where /FORM/ indicates the phonological form of words (sounds/segments) and [FUNCTION], a set of morphosyntactic features, and where the morphological as well as phonological constraints are assumed in terms of what Jackendoff (2002) has called Parallel Architecture of Grammar:

Phonological structure ↔ Morpho-Syntactic structure ↔ Conceptual structure

It assumes a phonological form for all the lexemes and morphemes, and the traditional distinction between words and rules surfaces instead as the absence or presence of variables in lexical items, i.e. a new word is formed by replacing the variable [x] in the schema with a concrete word; for example, the abstract schema $[[x]_{vi} [AF]_{vj}]_{vj}$, where [x] is a verbal theme and AF, an affix, is a projection of the paradigmatic relationship between a set of inflected forms as illustrated in (20).



The relation between the abstract schema and the individual verbs that conform to it is that of instantiation. Thus, abstract schemas express generalizations about sets of existing inflected forms, and provide the recipes for coining new inflected forms¹⁸ (BOOIJ, 2010). Words, syntactic structures, etc. are assumed to be mentally stored as constructs or constructions. Constructs are specific (actual words or phrases) while constructions are more general patterns stored as templates or schemas.

¹⁷ For simplification, I retain Spuy’s notation.

¹⁸ An important challenge for Word and Paradigm models is the limited productivity.

CxM is an appropriate framework for the analysis of French modelling verbal morphology in that the phonology-morphology interface is maintained, and the rules of formation (which are procedural and overpowerful) are replaced by a constructional approach of templates and schemas “which can be derived directly from the lexical items that motivate them” (JACKENDOFF; AUDRING, 2018, p. 10).¹⁹

Regardless of the analysis adopted, there is essentially two ways to account for all the grammatical markings of the finite Tenses (imperfective): either by supporting multiple zero affixes, or by positing a ‘Global Affix’ (GAF) where the morphosyntactic properties are combined within the same slot. For example, the first solution for [parl] *je parle* ‘I speak’ is to argue that this form is composed of a basic stem, a Tense marker Ø, a Mode marker Ø, a Person marker Ø, and a Number marker Ø, i.e. /parl - Ø1 - Ø2 - Ø3 - Ø4 /, where - Ø1, - Ø2 - Ø3 - Ø4 represent, phonologically, the absence of these markers. In other words, one must admit that previous accounts also, implicitly, resort to the concept of GAF; this is the case for Person markers that implicitly include Number, and Tense makers that include Mode. Coupe (2013) observes though informally that Tense and Mode share intertwined relationship and are analyzed as a “hybrid tense/mood system” to explain the contrasting presence/absence of these major grammatical categories.²⁰⁻²¹

In the system I propose, there is only one GAF, which consists of the fusion of all the grammatical morphosyntactic properties (eg. /parl-ε/, where /ε/ reflects simultaneously the features of *T/M/P/N*).

19 As pointed out by a reviewer, my analysis can be easily transposed to other frameworks that propose affixal segmentation. However, and in contrast with Distributed Morphology, the relevance of CxM is indorsed in its capacity of 1) replacing rules of formation, which are procedural and overpowerful, by motivated schemas, which are more natural and general, and 2) providing a system in which both the productive and the irregular aspects of language can be accounted for.

20 Coupe (2013) describes the fusion of tense and mood as a result of a diachronic phenomenon related to nominalizing morphology.

21 Cf. also Zwicky (1985, p. 374), for the combination of morphosyntactic properties, i.e. case, gender and number in German declension.

(21) **Global AFFIX (GAF) :**

GAF is an abstract slot for inflectional material; it represents the combination of a set of morphosyntactic features, which operate within the same space with no fixed order.

GAF, as a complex affix, permits to avoid morpheme zero phenomenon, provides a system in which all the morphosyntactic properties are comprised, and ensures a natural and unified analysis. In other words, GAF empowers, from a phonological and morphological point of view, the analysis of French verbal inflection, as demonstrated below.

The following tableaux indicate the decomposition of the inflected forms in the paradigms of the French Finite Tenses:

(22) Representation of the Imperfective tenses inflected forms

a) PRES IND

	<i>Parler</i>	<i>Finir</i>	<i>Cuire</i>	<i>Partir</i>	<i>Connaître</i>	<i>Coudre</i>
1sg	stem	stem	stem	stem	stem	stem
2sg	stem	stem	stem	stem	stem	stem
3sg	stem	stem	stem	stem	stem	stem
1pl	stem- $\tilde{\delta}$					
2pl	stem-e	stem-e	stem-e	stem-e	stem-e	stem-e
3pl	stem	stem	stem	stem	stem	stem

b) IMP IND

	<i>Parler</i>	<i>Finir</i>	<i>Cuire</i>	<i>Partir</i>	<i>Connaître</i>	<i>Coudre</i>
1sg	stem- ϵ					
2sg	stem- ϵ					
3sg	stem- ϵ					
1pl	stem-j $\tilde{\delta}$					
2pl	stem-je	stem-je	stem-je	stem-je	stem-je	stem-je
3pl	stem- ϵ					

c) FUT IND

	<i>Parler</i>	<i>Finir</i>	<i>Cuire</i>	<i>Partir</i>	<i>Connaître</i>	<i>Coudre</i>
1sg	INF-e	INF-e	INF-e	INF-e	INF-e	INF-e
2sg	INF-a	INF-a	INF-a	INF-a	INF-a	INF-a
3sg	INF-a	INF-a	INF-a	INF-a	INF-a	INF-a
1pl	INF-ō	INF-ō	INF-ō	INF-ō	INF-ō	INF-ō
2pl	INF-e	INF-e	INF-e	INF-e	INF-e	INF-e
3pl	INF-ō	INF-ō	INF-ō	INF-ō	INF-ō	INF-ō

d) PRES COND

	<i>Parler</i>	<i>Finir</i>	<i>Cuire</i>	<i>Partir</i>	<i>Connaître</i>	<i>Coudre</i>
1sg	INF-ε	INF-ε	INF-ε	INF-ε	INF-ε	INF-ε
2sg	INF-ε	INF-ε	INF-ε	INF-ε	INF-ε	INF-ε
3sg	INF-ε	INF-ε	INF-ε	INF-ε	INF-ε	INF-ε
1pl	INF-jō	INF-jō	INF-jō	INF-jō	INF-jō	INF-jō
2pl	INF-je	INF-je	INF-je	INF-je	INF-je	INF-je
3pl	INF-ε	INF-ε	INF-ε	INF-ε	INF-ε	INF-ε

e) PRES SUBJ (based on the 3pl Pres. Ind.)

	<i>Parler</i>	<i>Finir</i>	<i>Cuire</i>	<i>Partir</i>	<i>Connaître</i>	<i>Coudre</i>
1sg	3pl.	3pl	3pl	3pl	3pl	3pl
2sg	3pl	3pl	3pl	3pl	3pl	3pl
3sg	3pl	3pl	3pl	3pl	3pl	3pl
1pl	3pl-jō	3pl-jō	3pl-jō	3pl-jō	3pl-jō	3pl-jō
2pl	3pl-je	3pl-je	3pl-je	3pl-je	3pl-je	3pl-je
3pl	3pl	3pl	3pl	3pl	3pl	3pl

As we can observe it, the system of verbal suffixes is extremely regular and paradigmatic; this regularity makes it very easy to identify and decompose the lexical items from the inflectional endings.²² Such forms are predictable enough to be handled by grammar.²³ Tableaus (22a,b) show that the verbal

²² Cf. also Bybee (1995) for the same conclusions.

²³ See Section 2 of this paper, to view how some form variations are easily related by universal phonological constraints (cf. also, FRUCHTER; STOCKALL; MARANTZ, 2013).

inflectional paradigms of the Ind. Pres. and Ind. Imp., both are based on the stem (root).²⁴ Tableaus (22c,d) show that the Fut. Ind. and Pres. Cond., each one is based on the verb infinitive form, whereas the Pres. Subj., (22e), is based on the 3pl Pres. Ind.²⁵ Consequently, each verbal form expresses the realization of the morphosyntactic properties stated in (23).

- (23) Pres. Ind. → stem + GAF
 Imp. Ind. → stem + GAF
 Fut. Ind. → Infinitive + GAF
 Pres. Cond. → Infinitive + GAF
 Pres. Subj. → 3pl Ind Pres + GAF

This analysis requires that Finite Tenses are derived from the GAFs presented in (24).

(24) *GAF (tense, mode, person, number)*

	1sg	2sg	3sg	1pl	2pl	3pl
Pres. Ind.	-	-	-	ḥ	e	-
Fut. Ind.	e	a	a	ḥ	e	ḥ
Imp. Ind.	ε	ε	ε	jḥ	je	ε
Pres. Cond.	ε	ε	ε	jḥ	je	ε
Pres. Subj.	-	-	-	jḥ	je	-

Table (24) conveys double information:

1) It indicates that this system, although there are 6 values of Person, and 5 values of tense, which makes a total of 30, holds 22 suffixes. If we were to consider the features of tense,

²⁴ Cf. Estivalet and Meunier (2015) whose psycholinguistic test results suggest that the verbal inflectional paradigm of the Ind. Pres. is based on the stem, and that phonological stem changes have only one abstract phonological underspecified representation in the mental lexicon because even idiosyncratic known verbs are decomposed the same way.

²⁵ These findings cannot be captured in WP or space and dependency models, which posit completely combinatorial and internally structured representations.

mode, person and number, separately, we would end up with 120 suffixes. Consequently, not only does the system I propose result in a considerable simplification of French verbal inflection, it is economic and reflects the competence of the French speakers.

2) It also shows that there are only 6 distinct suffixes and some paradigms share the same suffix; this syncretism is systematic and regular.²⁶ We can then formulate generalizations about whole classes of forms²⁷ as stated in (25).

(25) Suffix selection

• 1pl Pres. Ind./1pl Fut. Ind./3pl Fut. Ind.	→	GAF1: [ɔ̃]
• 2pl Pres. Ind./2pl Fut. Ind./1sg Fut. Ind.	→	GAF2: [e]
• 1pl Imp. Ind./1pl Pres. Cond./1pl Pres. Subj.	→	GAF3: [jɔ̃]
• 2pl Pres. Ind./2pl Pres. Cond./2pl Pres. Subj.	→	GAF4: [je]
• 1,2,3sg, 3pl Imp. Ind./1,2,3sg, 3pl Pres. Cond.	→	GAF5: [ɛ]
• 2,3sg Fut. Ind.	→	GAF6: [a]
• 3pl Pres. Ind.	→	GAF7: /x/ a Timing Unit for stem-final FC

These combinations can be sketched in a general schema:

(26) *General schema for French verb inflected forms*

$$\langle [[x]_{vi} \text{ [GAF]}_{j|vj}] \rangle$$

Some instances of this schema are exemplified in (27).

(27) Examples of particular schemas of inflected verb forms

- a) $\langle [[x]_{v \text{ stem}} \text{ j}\tilde{\delta}]_{v \text{ 1pl Imp. Ind.}} \rangle$
- b) $\langle [[x]_{v \text{ stem}} \tilde{\delta}]_{v \text{ 1pl Pres. Ind.}} \rangle$
- c) $\langle [[x]_{v \text{ Inf.}} \tilde{\delta}]_{v \text{ 1pl Fut. Ind.}} \rangle$
- d) $\langle [[x]_{v \text{ stem}}]_{v \text{ 1sg Pres. Ind.}} \rangle \approx \langle [[x]_{v \text{ stem}}]_{v \text{ 2sg Pres. Ind.}} \rangle \rightarrow \langle [[x]_{v \text{ stem}}]_{v \text{ 1,2,3sg Pres. Ind.}} \rangle$
- e) $\langle [[x(C)]_{v \text{ stem}} \text{ [}\tilde{\epsilon}\text{]}_{v \text{ 3pl Imp. Ind.}}]_{v} \leftrightarrow \langle [(x)_{\omega} \text{ (CV)}_{\sigma}]_{v \text{ 3pl Pres. Ind.}} \rangle$

²⁶ Syncretism is very common in inflectional paradigms (CARSTAIRS, 1981).

²⁷ As stressed by Zwicky (1985, p. 374), a paradigm is not merely a list.

The difference between schema (27b) and schema (27c) is the selection of the basic theme, i.e. the verbal theme of (27b) is the stem, whereas that of (27c) is the Infinitive form. Schema (27d) indicates that the inflected form of the 1sg Pres. Ind. is identical to the one of the 2sg Pres, which can be combined in one schema. Ind. Schema (27e) accounts for the realization of a consonant either PC or FC in front of an empty onset, where (ω) indicates a prosodic word and (σ) a syllable.

The analysis portrayed in (22-27) appears more accurate than previous studies of French verbal inflection, since it accounts for all the markers of Tense, Mode, Aspect, Person and Number, without resorting to an impressive number of rules of elision, insertion, conversion, correspondence or implication, that are generally arbitrary. It also avoids the use of thematic segments to obtain the appropriate surface form. Furthermore, the concept of GAF allows a more general and unified analysis.

Conclusion

The analysis proposed in this paper comes up much more simple, economic, and consistent than previous analyzes that use two types of independent suffixes: suffixes of tense and person, which inevitably lead to an impressive number of rules to justify the presence/absence of Tense and Person in the many cases where no marker is traceable. My approach has the benefit of avoiding : 1) the use of different analyses depending on the group or class of verbs, 2) the resort to thematic vowels associated with the underlying form of verbal stems that must be deleted during derivation, 3) the resort to consonant epenthesis to account for the presence of /t/ and /d/ in the Future/Conditional forms of

verbs like *connaître* and *coudre*, and 4) a non-productive and phonologically unmotivated rule of conversion of /ɛ/ to /j/ to justify the presence of /j/ in the 1,2 pl Imp Ind/ Pres Cond/ Pres Subj. More specifically, the concept of GAF has made it possible to avoid zero suffixes and to account for all the grammatical morphosyntactic properties. It also provides a system in which French verbs' inflectional morphology is very regular and paradigmatic, and ensures a more natural and unified analysis. This analysis also has the advantage of explaining, by means of a very general principle, the realization of a stem final FC in front of the GAFs /jʃ/ and /je/ as in front of any suffix beginning with an empty onset.

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