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DOI
10.1075/avt.32.03don

Publication date
2015

Document Version
Final published version

Published in
Linguistics in the Netherlands

License
Unspecified

Link to publication

Citation for published version (APA):
Don, J., Sleeman, P., & Westveer, T. (2015). Three types of suffixes in French: Discarding the learned / non-learned distinction. *Linguistics in the Netherlands*, *32*, 33-47. https://doi.org/10.1075/avt.32.03don

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Three types of suffixes in French

Discarding the learned / non-learned distinction*

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Traditionally a two-way distinction is made in French between learned and non-learned suffixes, based on etymology. However, this distinction does not account for all suffixes. Furthermore, suffixes are traditionally considered as categorial heads, but some suffixes derive words of multiple categories. This paper proposes an alternative analysis of French suffixes, distinguishing three instead of two types, using a theory by Creemers et al. (2015) proposed for Dutch. In their analysis in the framework of Distributed Morphology, Creemers et al. distinguish three instead of two types of suffixes, proposing an alternative to Lowenstamm (2010). Starting from their proposal, we show that it is possible to distinguish three types of suffixes in French as well, accounting for the categorial flexibility of some suffixes, without resorting to the vague distinction between learned and non-learned.

Keywords: morphological derivation, French, categorial flexibility, learned vs. non-learned, Distributed Morphology

1. Introduction

Traditionally, in French a distinction is made between two types of suffixes, learned and non-learned. This distinction is mainly made on the basis of whether a suffix triggers a rule of Learned Backing (hereafter: LB) or not (Dell & Selkirk 1978). This is a vocalic change, involving the front vowels /ɛ/ and /œ/, that change into the back vowels /a/ and /ɔ/ respectively. Only learned suffixes (*suffixes savants*), which were borrowed from Latin in the mediaeval period or later, trigger this rule. Examples are given in (1) and (2):

* We would like to thank two anonymous reviewers for valuable comments and suggestions.

Linguistics in the Netherlands 2015, **33–47**. DOI 10.1075/avt.32.03don
ISSN 0929–7332 / E-ISSN 1569–9919 © Algemene Vereniging voor Taalwetenschap

(1) Learned suffixes

-ité	*céc-ité*	'blindness'
-al	*nomin-al*	'nominal'

(2) Non-learned suffixes

-age	*bavard-age*	'chatter'
-té	*beau-té*	'beauty'

Learned Backing is illustrated in (3).

(3) non-learned learned

a.	*mer*	*a-merr-**ir***	*mar-**in***
	'sea'	'to land at sea'	'sailor'
b.	*fleur*	*fleur-**ir***	*flor-**al***
	'flower'	'to flower'	'flowerish'

As can be expected, the learned suffixes can also be subject to this vocalic change themselves when followed by another learned suffix (4):

(4)

a.	*danger-eux*	*danger-os-**ité**^{L}*
	'dangerous'	'dangerousness'
b.	*joy-eux*	*joy-eus-**eté**^{NL}*
	'joyful'	'joyfulness'

Unfortunately, the distinction between learned and non-learned suffixes is not always that clear-cut. In fact, only when there is LB can one verify whether a suffix is learned or not. In other cases, the classification of a suffix is based on the date of introduction in the language. Of course, such criteria are not available to the language-learning child and should therefore be avoided. Therefore, the main goal of the present paper is to give the distinction between learned and non-learned suffixes in French a more firm empirical and theoretical foundation.

A second somewhat problematic issue for traditional approaches towards French morphology is the existence of suffixes that are categorially flexible. That is, some suffixes derive words of which some are adjectival whereas others are nouns, as is shown in (5):

(5)

a.	nominal:	*une boit-euse^{N}*	
		'a cripple (woman)'	
b.	adjectival:	*une fête joy-euse^{A}*	
		'a joyful party'	
c.	both:	*un cosmopol-ite^{N}, un homme très cosmopol-ite^{A}*	
		'a cosmopolitan', 'a very cosmopolitan man'	

The same suffix can derive a noun, as in (5a), and an adjective, as in (5b). The suffix in (5c) forms a special case. Based on the same root *cosmopol-* it can derive both a noun and an adjective.

Zwanenburg (1986) considers the suffixes in (5) as being either nominal or adjectival suffixes. He argues that these should be registered as such in the lexicon. The adjectival use of a nominal suffix or the nominal use of an adjectival suffix is (i) allowed by syntax, or (ii) should be mentioned in the lexicon for each noun separately. We think this proposal is unnecessarily complicated and can be avoided if one allows suffixes to be categorially flexible.

In order to deal with these two problematic issues, we propose a new analysis, based on a theory by Creemers, Don & Fenger (2015) (hereafter CDF) for Dutch. They distinguish three types of suffixes, instead of two, as traditionally assumed for Dutch, and argue that some suffixes should be seen as roots, whereas others are categorial heads, thus accounting for both stress-sensitivity and categorial flexibility of some suffixes. We show that this theory also holds for French. This analysis allows us to distinguish different types of suffixes without having to rely on the vague distinction between learned and non-learned elements. Secondly, the analysis also explains why some suffixes are categorially flexible, whilst others are not. The analysis is couched within the framework of Distributed Morphology (hereafter DM) (Halle & Marantz 1993; Harley & Noyer 1999; Marantz 2007). It would extend the limits of this paper to defend this choice (but see e.g. Marantz 1997 for arguments against a lexicalist approach). However, given this choice an alternative has to be found for the observations that received an explanation in terms of level-ordering in lexical approaches to morphology (see e.g. Kiparsky 1982).

Building on a proposal by Lowenstamm (2010), who argues that all affixes are roots, we propose that some affixes are roots, whereas others are categorial heads. In the next section, we will introduce the theory proposed by CDF for Dutch that will be used as a basis for our analysis. In Section 3 we will present our analysis of the French suffixes according to this proposal. In Section 4 we will turn to problematic cases that at first sight seem to contradict the theory. A brief conclusion will be given in the final section.

2. Three types of affixes

We propose an analysis for the French data along the lines of CDF's analysis for Dutch. We first briefly introduce CDF's proposal before we turn to our analysis of the French data.

In Dutch traditionally a distinction is made between two types of affixes, based on their behavior w.r.t. stress-rules (e.g. Trommelen & Zonneveld 1989).

Dutch hosts stress-sensitive suffixes influencing the stress-pattern of the base and stress-neutral suffixes that do not.

In DM, a separation is made between a (morpho-) syntactic level of representation and the morpho-phonological level of representation (cf. Beard 1995). This latter level can be seen as 'realizing' or 'spelling out' the morpho-syntactic level. Affixes are seen as so-called Vocabulary Items (hereafter: VI) realizing categorial heads (Marantz 1997; Marvin 2003). So, English *-ity* is a VI realizing a nominal head. Since the VI's themselves do not contain any grammatical information, but only realize this, it is far from trivial to transpose the traditional distinction between stress-sensitive and stress-neutral affixes to the theory of DM.[1]

Secondly, being categorial heads, the affixes are expected to derive just a single category of words, but CDF (following De Belder 2011) show that also in Dutch there is a group of flexible affixes that in the sense that they derive words belonging to different categories — similar to what we have seen in (5) for French.

In order to try to account for the distinction between stress-sensitive and stress-neutral suffixes within the framework of DM, Lowenstamm (2010) argues, contrary to the traditional view in DM, that suffixes are not categorial heads, but bound roots. As bound roots, these suffixes do not have a category, hence their categorial flexibility. For Lowenstamm, the classical distinction between stress-neutral and stress-sensitive falls out from a distinction in the type of element with which the morpheme merges. Roughly, stress-sensitive affixes only merge with roots, whereas stress-neutral affixes only merge with already categorized structures. Assuming that categorial heads are phase-boundaries, Lowenstamm is able to derive the distinction between stress-neutrality and stress-sensitivity from the different structural position that these elements occupy.

CDF criticize Lowenstamm's proposal. They point out that there is a class of affixes that does not display the categorial flexibility one would expect if all affixes were indeed roots. Moreover, they observe a correlation between categorial flexibility and stress-sensitivity on the one hand, and lack of flexibility and stress-neutrality on the other. More specifically CDF's alternative proposal distinguishes three types of affixes: root affixes that are flexible, attach to roots, and are stress-sensitive; head-affixes that are categorially rigid, only attach to categorized words, and are stress-neutral; and thirdly a type of affix that behaves as head-affixes but does influence the stress-pattern. CDF calls these latter affixes 'first heads' for reasons that will become immediately clear.

We summarize the types of affixes and their properties in table (6):

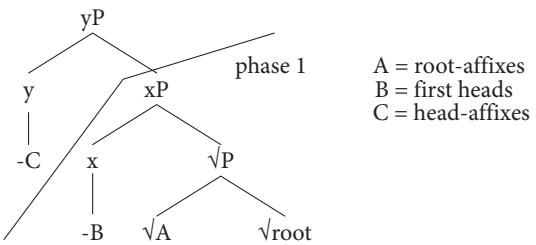
1. See Marvin (2003) for an attempt in which Halle & Vergnaud's (1987) distinction between cyclic and non-cyclic affixes is incorporated. Lowenstamm (2010) criticizes this attempt and offers an alternative approach.

(6)

	Attach to roots	Stress-sensitive	Categorially flexible
Root-affixes	+	+	+
First heads	+	+	–
Head-affixes	–	–	–

All affixes that attach to roots are also stress-sensitive. Furthermore, categorial flexibility is a property exclusive to root-affixes. CDF claim that the correlating properties in (6) are not coincidental, but follow from the position of the morphemes realized by the affixes in the syntactic structure. The place of the suffixes in the syntactic structure is shown in (7):

(7)



As can be seen, both root-affixes (A) and 'first heads' (B) appear in the first phase. This directly follows from the way phases are defined by Embick (2010). A phase is determined by a categorial head which has a cyclic head in its complement. Since B in (7) does not have a cyclic head in its complement, B is spelled out in the same phase as the root-affixes; it is a first head. C is in a different phase since it is a head with a cyclic head (B) in its complement. A phase is phonologically (and semantically) interpreted. Therefore, only affixes in the first phase will be able to influence the stress-pattern of the base. Later attaching affixes cannot because at this stage, the phonological form of the inner phase is already fixed.

CDF test their proposal for Dutch. It turns out that it is indeed possible to empirically separate in Dutch the three types of suffixes mentioned above. Examples are given in (8) (the underlined parts mark stressed syllables):

(8) a. Root-affix:

-ief	*explos*	*explos-ief*
	'root'	'explosive'

b. First head:

-iteit	*flexibel*	*flexibil-iteit*
	'flexible'	'flexibility'

c. Head-affix:

-ing	*verhuis*	*verhuiz-ing*
	affix-house	affix-house-ing
	'to move'	'moving'

As can be seen, root-affixes (8a), as well as first heads (8b) influence the stress-pattern, whereas this is not the case for head-affixes (8c). Second, the word in (8a), containing a root-affix, can be used both as a noun and as an adjective, thus being categorially flexible, whereas the others (8b–c) cannot. In the next section we will turn to our analysis of the French suffixes, using the criteria introduced by CDF.

3. An alternative analysis of French suffixes

As has been shown in the introduction, the traditional distinction between two types of suffixes in French is not always clear-cut. In some cases criteria to determine whether a suffix is learned or non-learned do not converge. Secondly, some suffixes derive words of multiple categories for which no natural solution seems to exist within lexicalist approaches. In this section, we propose a different approach towards the classification of French suffix types that captures these problematic properties. Our distinction is based on the proposal by CDF for Dutch (see Section 2).

The most common French suffixes have been analyzed according to the properties proposed by CDF. We used the list of suffixes of the *Petit Robert* dictionary of French (2012) as an empirical basis for our analysis. This list contains 113 suffixes. Of this list, 37 suffixes have been excluded, because they were either extremely unproductive or had a highly specialized connotation used only in jargon (e.g. *-ose* in *fructose*). On the other hand, one supplementary suffix not in the list (*-uble*) has been added. This resulted in a corpus of 77 suffixes. In order to get information about their distribution, their behavior w.r.t. LB and their categorial and ordering properties, we used the dictionaries *Petit Robert électronique* (hereafter PRE) and the *Trésor de la langue française informatisé* (Dendien 2015), as well as Dell & Selkirk (1978).

The analysis according to the criteria mentioned above primarily divides the suffixes under consideration into two groups. For the moment, we will call them type I and type II suffixes. Their properties are displayed in table (9):

(9)

	Attach to roots	Trigger LB	Categorially flexible	Ordering ('<' = 'linearly precedes')
Type I	+	+	+	I < II, I < I *II < I
Type II	–	–	–	I < II, II < II *II < I

As can be seen in (9), the suffixes of the first type attach to roots, trigger LB, are categorially flexible, and can be followed by suffixes of type I or II, whereas they cannot follow a type II suffix. Type II suffixes cannot attach to roots, do not trigger LB, and are categorially fixed. They can be followed by type II suffixes, but not by type I. We will now illustrate these two suffix types with some examples.

Table (10) displays some typical examples[2] of the aforementioned type II suffixes of French:[3]

(10)

Suffix	Derives	Attaches to	Examples	Triggers LB
-age	N	N V	*gazonnage,* *accostage*	no (e.g. *fleurage*)
-aison	N	N V	*siglaison,* *comparaison*	no (e.g. *fleuraison*)
-esque	A	N	*moliéresque, ubuesque*	no
-eur/-euse	N	V	*voyeur, chanteur, chanteuse*	no
-té	N	A	*étrangeté, beauté*	no (e.g. *joyeuseté*)

As can be concluded from table (10), type II suffixes do not attach to roots, but only to words already having a category. Secondly, they only derive words of a single category, so they are not categorially flexible. Finally, they do not trigger LB. Our corpus contains in total 37 of these type II suffixes.

In table (11) some typical examples of French type I suffixes are given. The corpus contains 26 of these suffixes:

(11)

Suffix	Derives	Attaches to	Examples	LB?
-ain / -an	N	bound roots N V	*humain,* *chapelain,* *couvain,*	Affected by LB: *humain > humanité* *africain > africanisme*
	A	bound roots N A	*humain,* *mondain,* *hautain,*	
-al / -el	A	bound roots N A	*nominal,* *collégial,* *continuel,*	Affected by LB: *maternel > maternaliser* *actuel > actualité*
	N	bound roots	*corporal*	*culturel > culturalisme* Triggers LB: *chœur > choral*

2. The complete lists for all suffix-types are included in the appendix.

3. Translations of the derived words are not relevant to our analysis and therefore not included.

-(t)eur/	N	bound roots	*acteur, amateur,*	Affected by LB:
-(t)rice		N	*ambassadeur,*	*professeur > professorat*
-eur		V	*charmeur,*	
(-or)	A	bound roots	*attracteur,*	
		V	*abaisseur*	
-eux/	N	bound roots	*taiseux,*	Affected by LB:
-euse		N	*siffleux,*	*dangereux > dangerosité*
(-os)		V	*boiteuse,*	*nitreux > nitrosation*
	A	bound roots	*nitreux,*	*adipeux > adiposité*
		N	*joyeux,*	Triggers LB:
		V	*boiteux*	*vapeur > vaporeux*
-iste	N	bound roots	*graphiste,*	Triggers LB:
		N	*latiniste,*	*criminel > criminaliste*
		A	*spécialiste,*	*matériel > matérialiste*
		V	*arriviste,*	
	A	bound roots	*alpiniste,*	
		N	*latiniste,*	
		A	*spécialiste,*	
		V	*arriviste*	

As can be observed in (11), the French type I suffixes can attach to bound roots, as well as to categorized words. Secondly, they are categorially flexible in that they can derive both nouns and adjectives. Finally, as the final column in (11) shows, type I suffixes trigger LB or are affected by it. The fact that not all type I suffixes can be affected by LB has a clear phonological explanation: the absence of a front vowel that can undergo LB.

So far, two distinct types of suffixes for French have been introduced. However, there still remain some suffixes (12) that do not seem to fit either of these two types. As CDF predict, there is a third intermediate suffix-type, the first head, which contains these remaining suffixes. Some examples of these remaining suffixes are displayed in table (12):

(12)

Suffix	**Derives**	**Attaches to**	**Examples**	**Triggers LB**
-ation	N	bound roots	*corporation,*	*nitreux > nitrosation*
		V	*frustration*	
-is(er)	V	bound roots	*mécaniser,*	*annuel > annualiser*
		N	*caraméliser,*	*vulgaire > vulgariser*
		A	*moderniser*	*maternel > maternaliser*
-isme	N	bound roots	*dynamisme,*	*africain > africanisme*
		N	*marxisme,*	*terreur > terrorisme*
		A	*modernisme,*	
		V	*arrivisme*	

-ité	N	bound roots A	*cécité, vérité, modalité*	*actuel > actualité* *dangereux > dangerosité*
-itude	N	bound roots N A	*altitude, latitude, négritude, exactitude*	*seul > solitude*

Table (12) shows that these intermediate-type suffixes attach to roots and to words having a category, just like the type I suffixes presented above. They trigger LB as well. However, they are not categorially flexible, but only derive words of a single category, like the type II suffixes. They do not undergo LB since there is never a following triggering suffix. Thus, they display properties of both type I (attach to roots, trigger LB) as well as of type II suffixes (categorial inflexibility) and form an intermediate type.

In order to compare the three types of suffixes found in our corpus, their properties w.r.t. the criteria used to distinguish them are summarized in table (13):

(13)

	Attach to roots	**Trigger LB**	**Categorially flexible**	**Ordering**
Type I **Root-suffixes**	+	+ (+ affected)	+	I < II, I < I *II < I
Type Ia **First heads**	+	+	–	I < Ia < II *II < Ia *Ia < I *Ia < Ia
Type II **Head-suffixes**	–	–	–	I < II, II < II *II < I

As can be concluded from (13), the French suffixes in our corpus can be divided into three different types that are identical to the three types of suffixes CDF distinguish for Dutch. The root-suffixes (type I) can attach to roots, trigger and are affected by LB and are categorially flexible. The first heads (type Ia) form an intermediate type. They can attach to roots and trigger LB, just as the root-suffixes, but they are not categorially flexible and are not affected by LB. In this respect, they resemble head-suffixes (type II), which are not categorially flexible either. Yet, head suffixes, in contrast to first heads, cannot attach to roots and do not trigger LB.

As suggested by the empirical data, the three types of suffixes display a hierarchy w.r.t their ordering in combinations of multiple suffixes. Root-suffixes always appear inside first heads, which in turn always appear inside head-suffixes, as shown in (14):[4]

4. There seem to be some apparent counterexamples to this ordering hierarchy. We will address them in Section 4.

(14) *actu-el* > *actu-al-ité* (I + Ia)
joy-eux > *joy-euse-té* (I + II)
coll-ation > *coll-ationn-ement* (Ia + II)

Furthermore, as has been mentioned, it is possible to combine two root-suffixes and two head-suffixes, but not two first heads. This follows directly from the definition of a first head: it is only the *first* head above the root phrase that behaves as such; all later heads have a categorial head in their complement and therefore induce new phases.

4. Apparent counterexamples in French

As has been shown in the previous section, it seems possible to distinguish three types of suffixes in French based on categorial flexibility, attachment to roots, LB and ordering, replacing the vague distinction between learned and non-learned elements. However, there are some problematic cases that at first sight seem to contradict our analysis. In this section, we will try to account for these problematic cases, which can be divided into three groups.

The suffixes in the first group, showing mixed behavior, cannot attach to roots and do not influence LB. Consequently, they should be head-suffixes. However, these suffixes seem to be categorially flexible, indicating that they should be root-suffixes. These suffixes are listed in (15):

(15) a. *-ais* *franç-ais*$^{N+A}$
'Frenchman'^{N} — 'French'^{A}
b. *-ois* *suéd-ois*$^{N+A}$
'Swede'^{N} — 'Swedish'^{A}
c. *-et* *jeun-et*$^{N+A}$
'very young person'^{N} — 'very young'^{A}
d. *-elet* *gant-elet*^{N} *maigr-elet*^{A}
'glove'^{N} 'too thin'^{A}
e. *-on* *fris-on*$^{N+A}$
'Frisian'^{N} — 'Frisian'^{A}
f. *-ot* *chemin-ot*$^{N+A}$
'railway employee'^{N} — 'about the railway'^{A}

The suffixes in (15) can at first sight derive both nouns and adjectives. However, it will turn out that these suffixes only apparently show flexible behavior. We will first discuss the affixes in (15a and b) and then move to the other examples in (15).

All words derived with the suffixes *-ais* and *-ois* (15a,b) in the PRE are indicated as being both adjectives and nouns. Contrary to root-suffixes, there are

no derivations with *-ais* or *-ois* that only have a nominal or adjectival use. Root-suffixes normally derive words that are only nouns or only adjectives (as exemplified in (5a,b)) and incidentally, forms that are ambiguous between the two. Therefore, the consistent ambiguity of the forms in *-ais* and *-ois* requires a separate explanation. We propose that the apparent flexibility of the derivations in (15a,b) follows from a morphological (or syntactic) operation deriving nouns referring to persons from the toponymic adjectives. This analysis is supported by the fact that all derivations with *-ais* and *-ois* have this specific meaning. We consider them to be adjectival derivations that allow for nominalization, as is shown in (16):

(16) a. *un homme français*^{A}, *une ville suédoise*^{A}
b. *un Français*^{N}, *le suédois*^{N}

We now turn to the suffixes *-elet*, *-et*, *-on* and *-ot* in (15c–f). These all display the same pattern. The PRE shows that the large majority of derivations with these suffixes are nominal. The list of words with *-elet* only contains 5 adjectives, which all have been created before 1600. If we oppose this to the truly flexible affixes in (11), we see a marked difference. For example for flexible *-al*, *–el* and *-iste* (17a) we find far more flexibility and productivity than for the 4 affixes under scrutiny (17b).

(17)		A	N	A and N	most recent form in PRE
a.	-al	600	±130	30	1951
	-el	233	±100	16	1947
	-iste	54	±430	300	1921
b.	-elet	5	30	0	1554 (A)
	-et	15	488	10	1739 (A)
	-on	0	3491	5	1721 (A and N)
	-ot	4	254	8	1904 (N + A)[5]

The PRE lists some derivations with *-et*, *-on* and *-ot* that are noun and adjective at the same time, just as for *-ais* and *-ois*. Furthermore, the majority of derivations with *-on* listed as noun and adjective have a special meaning, indicating origin, again like *-ais* and *-ois*. We consider these four suffixes to be nominal, deriving nouns of which some easily allow for an adjectival use. The possibility to derive adjectives is not directly related to and therefore not an inherent property of the suffix, but rather a property of the specific type of word.

The second problematic class is formed by the suffix-triplet *-able* / *-ible* / *-uble*. These suffixes attach to roots, but are not categorially flexible, indicating that they could be considered first heads. However, these suffixes precede other first heads,

5. This adjective is marked as 'familier' in the dictionary, meaning that it does not belong to the standard language.

like *-ité*, which would not be possible if they were first heads themselves. Secondly, it can be observed that although these suffixes do not undergo LB, because they do not contain the vowels affected by this phenomenon, they do display a formal change when followed by an element that triggers LB, as is shown in (18):

(18) *change-**able*** > *change-**abil**-ité*
*flex-**ible*** > *flex-**ibil**-ité*

We argue that this formal change is a phonological rule, operating in the root-domain, just as LB. Therefore, the suffixes *-able* / *-ible* / *-uble* can be analyzed as root-suffixes, because they can attach to roots and display an alternation comparable to LB, even when they are not categorially flexible. However, note that CDF's proposal (just like Lowenstamm's) does not predict that root-suffixes must be categorially flexible. If affixes are roots, they can merge with different categorial heads but they do not have to. Apparently, *-able* / *-ible* / *-uble* only merge with an adjectival head for reasons that might have to do with their semantics.

Finally, there seem to be some counterexamples regarding the ordering of the different suffix-types. According to the theory proposed by CDF, root-suffixes should always appear inside first heads, which in turn should always appear inside head-suffixes. Still, there are some cases where a head-suffix seems to precede a first head or a root-suffix, for which the analysis proposed in this paper does not account. Examples are shown in (19):

(19) *-ag-isme* *éclairagisme, esclavagisme*
-ment-al *gouvernemental, comportemental, départemental*

However, although the PRE lists more words ending with *-mental* next to the three mentioned in (19), it turns out that only the three in (19) are true French derivations, whereas the other words either have been borrowed from Latin or from English. Therefore the number of exceptions to the ordering of the three suffix types seems to be very limited.

5. Conclusion

In this paper we have tried to deal with two problematic issues of French derivational suffixes, that is, (i) the fact that the traditional distinction between learned and non-learned suffixes is quite vague and not learnable and (ii) the fact that some suffixes are categorially flexible, deriving words of multiple categories. Using a proposal by Creemers, Don & Fenger (2015) within the framework of DM, we have proposed a new analysis of French suffixes that shows the presence of three types of suffixes in French too, accounting for the categorial flexibility of some suffixes.

We argued that it is possible to distinguish three types of suffixes in French. First of all, there are root-suffixes that attach to roots, are categorially flexible, and trigger and are affected by LB. Secondly, there are first heads that attach to roots and influence LB as well, but are not categorially flexible and are not affected by LB. The third type consists of the head-suffixes, which cannot attach to roots, do not influence LB and are not categorially flexible.

Furthermore we have shown that some examples that appear to contradict our theory are actually quite marginal or not problematic after all. Thus we may conclude that the theory makes the correct predictions for French.

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Appendix: Lists of suffixes per type

i. Head-suffixes

-ade	*-emment*	*-ir*
-age	*-ence*	*-ise*
-aie	*-er*	*-ment*
-ail(le)	*-erie*	*-ois*
-ais	*-esque*	*-on(ne)*
-aison	*-esse*	*-onn(er)*
-amment	*-et*	*-ot*
-ance	*-et(er)*	*-ot(er)*
-ass(er)	*-eton*	*-ouill(er)*
-eau/-elle	*-eur/-euse*	*-oy(er)*
-el(er)	*-ie*	*-(e)té*
-elet	*-illon*	
-(e)ment	*-ing*	

ii. First heads

-ation	*-is(er)*	*-itude*
-atique	*-is(se)*	*-tion*
-ent	*-isme*	*-ure*
-ifi(er)	*-ité*	
-in(er)	*-iteur/-itrice*	

iii. Root-suffixes

-able/-abil	*-éen(ne)/-an*	*-if/-ive*
-ain/-an	*-el/-al*	*-in(e)*
-aire/-ar	*-er/-ar*	*-iste*
-al/-el	*-eur (f.)*	*-ite*
-at	*-(t)eur/-(t)rice/-or*	*-oir(e)*
-ataire	*-eur/-or*	*-ol(e)*
-ateur/-atrice	*-eux/-euse/-os*	*-tique*
-atif/-ative	*-ible/-ibil*	*-uble/-ubil*
-atoire	*-ien/-ian*	

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