

Diminutive reduplication in government phonology

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Resumo

As propriedades morfológicas e fonológicas da formação diminutiva por reduplicação são estudadas em função das hipóteses de Lowenstamm (1996, 1999) sobre a organização universal dos segmentos fonológicos e mais particularmente sobre a sílaba inicial das palavras de categorias lexicais essenciais. É proposto que a posição inicial seja o lugar da reduplicação diminutiva em francês. Fatos do francês de Quebec bem como do antigo grego são apresentados seguidamente para apoiar a hipótese segundo a qual as palavras são representadas universalmente por uma seqüência estrita de consoantes e de vogais (CVCV...).

This article deals with the diminutive formation by reduplication in French. Those reduplications are typically formed by the copy of the first consonant and the following vowel at the left of the base, for example *filille* 'little girl', diminutive of *fille* 'girl', *gueguerre* 'squabble' (figurative) diminutive of *guerre* 'war'. The morphological and phonological properties of those formations will be studied following the hypotheses of Lowenstamm (1996, 1999) on the phonological constitution of words from major lexical categories (nouns, verbs). It will be shown that the properties of the diminutive formation in French are compatible with the three next statements: 1) the initial CV site proposed by Lowenstamm (1999) is the place of diminutive reduplications in French; 2) this type of reduplications is restricted to the size of the initial site, that is the first consonant and vowel only; and 3) this process of reduplication is productive. Those hypotheses make predictions, first, that nouns beginning with an initial consonant cluster won't reduplicate, and second, that nouns semantically compatible with the diminutive interpretation will be able to form diminutive by reduplication. To assert those propositions, on one hand, we will present different types of diminutives obtained by reduplication in French and Canadian French, in order to show that this process is productive and that effectively consonant clusters do not reduplicate to form diminutives (at least, not with apparent implication of the initial site), and on the other hand, data from Canadian French and Ancient Greek will be analyzed to show that the universal organization of segments must be a strict consecution of consonants and vowels.

In the first section, we present the theory of government phonology and its new developments. The second section will be devoted to the morphological properties of the diminutive reduplication.

The study of nouns beginning with a consonant cluster will be the object of section 3. Finally, we will end this paper on reduplications implying complex segments (aspirates, nasals).

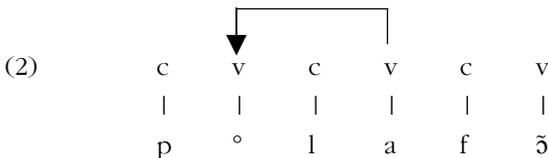
1. «ON THE BEGINNING OF THE WORDS»

The study of Afroasiatic languages has highly contributed to the progress of the theory of government phonology, especially on syllabic constituents. The work of Kaye, Lowenstamm & Vergnaud (1985, 1990) (henceforth KLV), among others, has shown that the organization of phonological segments in certain languages should be reconsidered according to the following principle.

- (1) If a language L meets the following two conditions, then L has no closed syllables:
 - i. L is a templatic language
 - ii. for any surface consonant cluster $C_i C_j$ displayed by L, L also displays the mirror-image surface cluster $C_j C_i$.

(=(1), in Lowenstamm 1996)

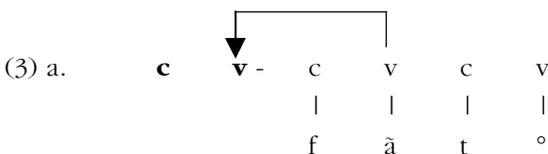
According to (1), a language satisfying the conditions stated therein has no codas. Ensuing principles put forward by KLV, Lowenstamm (1996) has extend the analysis of languages with no initial consonantal restrictions to all languages. He proposes that words of all languages are represented by a strict succession of consonants (C) and vowels (V), that is CVCVCV... Following this theory, there can't be any branching constituent. For example, a word like *plafond* 'ceiling' will be represented as in (2). Here, the empty vowel comprised between the /p/ and the /l/ is legitimized by the proper government of the phonetically realized vowel to its right.

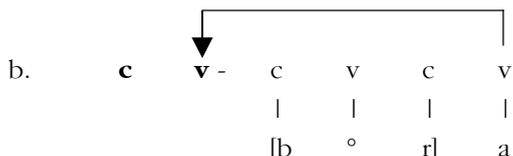


Furthermore, what has intrigued Lowenstamm in his 1999 paper are languages like French and English with no templatic phonology. Because of the proper government defined between vocalic constituents only, the prediction is that there will be no restrictions concerning consonants. Nevertheless, in French for example, we can only observe the sequences occlusive-liquid, but never the reverse one, occlusive-liquid (pl, *lp). Moreover, no language presents the sequence of decreasing sonority without presenting the increasing sonority sequence *(lb, *bl). To give an explanation to those observations, Lowenstamm (1999) proposes that each word belonging to a major lexical categories must be preceded by a CV site. This site is subject to the same requirements of phonological government than any empty vocalic position. Departing from this suggestion, Lowenstamm shows that the initial site in French and in languages presenting the same consonantal initial configurations (type 1) has to be properly governed, while in Arabic for example where the initial clusters are free (type 2), the site is not always governed. What are the implications of such a theory?

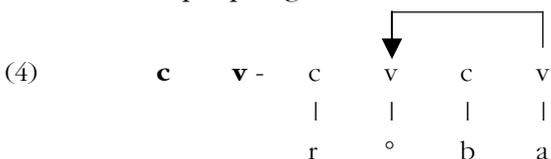
Since the initial site has to be properly governed in languages of type 1, we expect to find phonological arrangements allowing this proper government. This is what we observe in French for example. The consonantal word initials are limited to two configurations: a simple one (e.g. [fât] *fente* ‘crack’) or a complex one with increasing sonority (e.g. [bra] *bras* ‘arm’).

Lowenstamm (1999) adopts an idea put forward in Scheer (1996) suggesting that clusters formed by an occlusive and a liquid constitutes a closed domain. The result of the interaction between the two consonants is the possibility for the vowel captive by this relation to stay empty and to be transparent to proper government. The situations in (3a) and (3b) are then obtained.



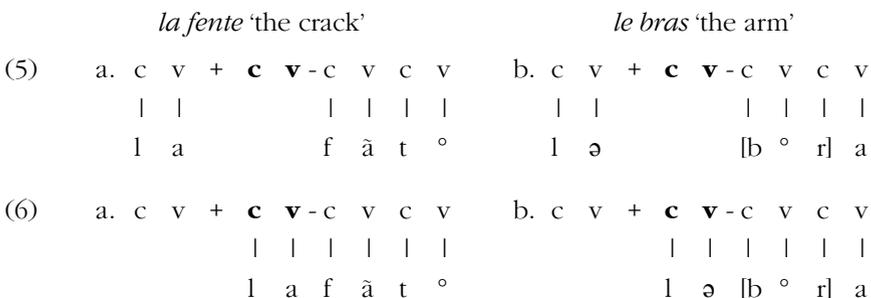


As the CV initial theory stipulates that French has a site always properly governed, both preceding situations are the only ones possible. A word like *[rba] is ungrammatical in type 1 languages because it blocks the proper government of the initial site, as (4) shows.



The representation in (4) can only belong to languages of type 2, where the initial site may stay ungoverned. Also, both (3a) and (3b) can represent words from type 2 languages. It follows from the government of the initial CV that lexical material can become embedded in it. Lowenstamm (1999) gives the example of cliticization in French and Biblical Hebrew. We will present a brief summary of his argumentation here in order to show that there can be a clear manifestation of the initial site. For more details, the entire article should be consulted.

Remember that French is a type 1 language and has an initial CV site that is always governed. The definite articles in French are reputed to cliticize onto the nouns they determine. This cliticization is expected to take place in the CV initial site because it is always properly governed. (5) and (6) show this process.



We can see in (5) that the clitic comes with his own CV, and in (6) that it deserts its CV to join the initial site of the noun on which it cliticizes. The CV left behind in (6) plays the role of the new initial site and is ready to host other lexical material.

For the type 2 languages, the behaviour is different. Those languages can manage an ungoverned initial site by phonological operations. Lowenstamm presents the case of the definite articles in front of some plurals of the segholate class in Biblical Hebrew. When the article *ba* is prefixed to those nouns, the situation is similar to the one in (5) in the sense that the prefix has its own CV.

(7) *ba* + *klabim* 'the dogs'

a.	c	v	+ c	v	- c	v	c	v	c	v	c	v	c	v	c	v
									\	/						
	h	a		[k	°	l]	a	b		i		m	°			

ba + *rqahm* 'the spices'

b.	c	v	+ c	v	- c	v	c	v	c	v	c	v	c	v	c	v
									\	/						
	h	a		r	°	q	a	ħ		i		m	°			

(from (26), in Lowenstamm 1999)

The status of the site is different between (7a) and (7b). In (7a), the initial CV site is properly governed by the vowel /a/ of the base. As we said before, lexical material can incorporate the site if and only if it is properly governed. We then expect to find the cliticized form **baklaBiim* for (7a), where the *ba* simply becomes integrated into the initial site of the noun. But it is not the case. To understand what happens, it's advisable to look at the situation in (7b). The representation in (7b) shows that the initial site is ungoverned. The vowel /a/ of the base has to legitimize the empty vocalic position between the /r/ and the /q/ and therefore cannot legitimize the CV site. The result of this situation is the impossibility for the article to move into the site. We have then a case of an empty CV position that became part of the word. This CV cannot remain silent and have to undergo phonetic

interpretation. Two strategies are available: compensatory lengthening or gemination. In (7b), the vowel /a/ of the prefix lengthened on the vocalic position of the initial site. This is illustrated in (8b). The situation in (7a) can be resolved exactly like the one in (7b). Lowenstamm (1999) assumes the «Uniformity Convention», stipulating that *for any given language, cliticization operates in uniform fashion with respect to the licensing status of the host site* (p.12). So, Biblical Hebrew has cases of licensed initial site and cases of unlicensed initial site. The uniformity condition will make the CV site remains unlicensed throughout the language. What we observe for the cliticization in (7a) is the gemination of the first consonant /k/ of the noun to legitimize the CV site. This is illustrated in (8a).

(8) Gemination

a. c v + c v - c v c v c v c v c v
 | | ↖ | | | | | \ / | |
 h a k ə l a b i m °
 [hakkəlaβiim]

Compensatory lengthening

b. c v + c v - c v c v c v c v c v
 | | ↖ | | | | | \ / | |
 h a r ə q a ḥ i m °
 [haarəqahim]

(= (28a) et (28b), in Lowenstamm 1999)

It comes out of our discussion that the differences between languages, as for clusters at the beginning of words, are explainable by the presence of an initial site. Whereas we can observe a clear phonological manifestation of the initial CV site in languages of type 2 like Arabic and Biblical Hebrew, it is not the case for languages of type 1 like French and English. We can therefore question the presence of this CV site in languages where it is always properly governed and where no phonological operations of gemination or compensatory lengthening are expected. How can we verify the

presence or not of this site at the initial of French nouns? In the next section, we will put forth facts from French allowing us to answer this question.

2. THE DIMINUTIVE REDUPLICATION

Reduplication is a strategy of word formation used in most languages. This process imply that a part of a word or an entire word become affixed to itself to create another derived word. In French, we find cases of reduplication. There are two principal types: diminutives and onomatopoeias. We will leave the study of the latter for another research. For this paper, we will concentrate on diminutive (often figurative) formations by reduplication. Those nominal reduplications in French are characterized by the copy of the first consonant and the following vowel at the left of the base noun. Here are some examples in (9).

(9)	bébête	'little animal'	from <i>bête</i> 'animal'
	bibiche	'little darling'	from <i>biche</i> 'doe, darling'
	bobosse	'hunchback'	from <i>bosse</i> 'hump'
	fifille	'little girl'	from <i>fille</i> 'girl'
	gougoutte	'little drop'	from <i>goutte</i> 'drop'
	guéguerre	'squabble'	from <i>guerre</i> 'war'
	poupoule	'chick (woman)'	from <i>poule</i> 'hen'
	susucré	'little sugar'	from <i>sucre</i> 'sugar'

What are the exact functions assumed by this type of reduplication? First, we can attribute a morphological function to reduplication. Béchade (1992:157-158) notices that we can legitimately consider different processes, other than derivation or composition, put forward by French to enrich its vocabulary, as integrating a general system of word formation. The words in (9) are then clear cases of new word formation. Moreover, morphological processes, unlike phonological processes, often compete, as shown by Bauer (2001). This is what we observe in French with the minimal pairs *gougoutte*

Since the initial site is argued to be present in front of all nouns, the prediction is that this process is productive. Productivity is defined by Bauer (2001) and Bybee (1985, 1996) (among others) as the probability for a pattern to be used to form new words. Bybee shows that the amount of semantic and/or phonological restrictions is inversely proportional to the chances for a process to be productive. In the case of diminutive reduplications, we have seen that there was very few semantic restrictions, in the sense that the meaning of the reduplicate nouns is predictable on the meaning of the base. Moreover, all the nouns in (9) are formed by the phonological reduplication to the first CV of the base. We can notice here that there is only few phonological restrictions. Then, the process of reduplication presented in (11) has fulfilled all the conditions to be productive. The productivity of reduplication can be verified by the nouns in (12), all created on the model in (11).

(12)	[bɔbɔt]	from <i>botte</i> 'boot'
	[kakar̥t]	from <i>carte</i> 'card'
	[ʃɛʃɛz]	from <i>chaise</i> 'chair'
	[fœfœ]	from <i>feuille</i> 'sheet'
	[fɛfɛs]	from <i>fesse</i> 'buttock'
	[papat]	from <i>patte</i> 'leg'
	[pɔpɔrt]	from <i>porte</i> 'door'
	[tɛtɛt]	from <i>tête</i> 'head'

Of course, without a particular context, those words are hardly acceptable. Nevertheless, a French speaker will understand *petite chaise* 'little chair' if he hears [ʃɛʃɛz], as for *petite patte* 'little leg' if he hears [papat]. For example, the noun *[patpat] for 'little leg', formed by the reduplication of the entire word could not be found. Since the semantic interpretation is predictable and since the reduplication is always restricted to the first open syllable in the creation of a new word, we can talk about a productive process. Productivity of the diminutive reduplication seems to be explained by the presence of an initial site.

Speaking in terms of a CV, the prediction that only the series Consonant-Vowel will be reduplicated is made. We have suggested in (11) that reduplication operates by an association from left to right of the copied phonological content in front of the base. Because the reduplication site has a restricted size, we predict that words beginning with a consonant cluster cannot reduplicate. This question will be the object of the next section.

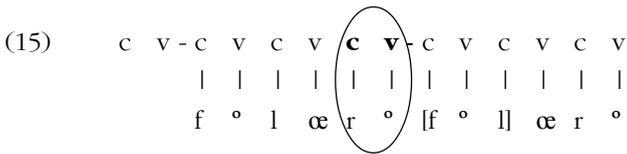
3. THE CONSONANT CLUSTER CASE

So far, we have seen that nouns beginning with a simple consonant could be derived in diminutives by the reduplication to the left of the base of the first consonant and the following vowel. What we have to verify now is if reduplication is possible on nouns beginning with a consonant cluster and if this reduplication observes the same rules than in the preceding cases.

In search of an answer, we presented a list of nouns with initial consonant cluster to a group of French speakers and we asked them to form their diminutives by reduplication on the model illustrated in (11). The results of this query are resumed in (13). They are divided in two strategies of derivation. The first one in (13a) consists of a complete reduplication of the base. The second one in (13b) presents a reduplicant that is the base without the final consonant.

- | | | | | | |
|---------|------------------------|-------------|----|--------------------------|------------|
| (13) a. | <i>bras</i> 'arm' : | bras-bras | b. | <i>cloche</i> 'bell' : | clo-cloche |
| | <i>clé</i> 'key' : | clé-clé | | <i>fleur</i> 'flower' : | fleu-fleur |
| | <i>fruit</i> 'fruit' : | fruit-fruit | | <i>glace</i> 'ice' : | gla-glance |
| | <i>pluie</i> 'rain' : | pluie-pluie | | <i>place</i> 'place' : | pla-place |
| | <i>pois</i> 'pea' : | pois-pois | | <i>plume</i> 'feather' : | plu-plume |

The diminutive formation illustrated by the first strategy meets another process existing in French. Indeed, we find a type of reduplication implying the complete copy of the base. Examples of this type of derivation are *train-train* 'routine' from *train* 'train' and *trou-trou* 'ornament with holes' from *trou* 'holes'. As these examples



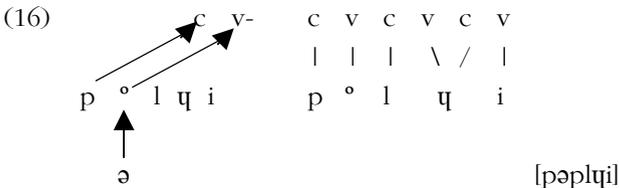
In (14), the noun *fleur* is reduplicated entirely. Since its initial CV site is properly governed, lexical material can be embedded in it. That is what happens in (15). The difference here is that the association is not from left to right and looks more like compounding. The copy merged within the base via the initial CV site. Government Phonology predicts the ungrammaticality of such a form. Scheer (2000) proposed that liquids have to be legitimized by a following realized vowel, except for the final position. In (15), the final liquid /r/ of the base is followed by an empty vocalic position but a final one. On the other hand, the consonant /r/ of the copy has now become a part of the word and has to be legitimized. This is not the case since the vocalic position following it is empty. Two actions can be envisaged to correct the situation: a schwa epenthesis in the vocalic position to legitimize the final /r/ of the copy or a deletion of the consonant /r/. The solution chosen is the most economical, the deletion of the final consonant of the copy.

It seems that the process involved in the diminutive formation in (13b) is the same than in (13a). This type of reduplication is not very productive in French as we said earlier. In fact, very few reduplications of entire words bring a diminutive semanticism. It is rather used to mark onomatopoeias (ex. *blabla* ‘smooth talk’, *froufrou* ‘rustle’). We will not discuss those cases more in this paper. What can be said about the reduplications described here is that it implies the entire copy of the base. At first sight, this strategy raises doubts about the hypothesis of an initial CV as the site of diminutive reduplication in French. Actually, on surface, we observe the reduplication of the first two consonants and the following vowel. We have presented in (14) and (15) what we believe to be the best analysis of those reduplications. The thing is, we still don’t have any morphological use of the initial site with nouns beginning with a consonantal cluster. The two next sections are concerned with this fact.

3.1. Diminutives in Canadian French

Data from Canadian French are particularly interesting for the study of diminutive formation by reduplication. The same nouns that served for the experience resumed in (13) have been presented to speakers of Canadian French, with the identical instructions, that is to form the diminutives of those nouns on the model (11). The results contrasts with the ones obtained for the French speakers. Lets see for example the noun *pluie* ‘rain’. Remember in (13a) that the diminutive of this noun, *pluie-pluie* ‘little rain (fig)’, was formed by the entire reduplication of the base. This is not what happens for some of the Canadian French speakers. Rather, the initial CV site is used.

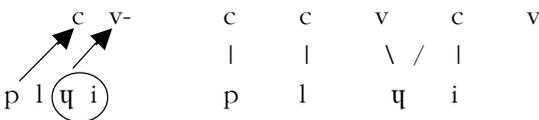
The noun *pluie* is preceded by an initial CV. The reduplication, as we describe it in section 2, consists of a copy of the phonological content at the left of the base and of an association from left to right of the segments on the segmental positions C and V of the site. The prediction that we made is that if the initial site is used to form diminutives, forms like *[plɥiplɥi] *pluie-pluie* or *[plyplɥi] *plu-pluie* or even *[plɥiplɥi] *pli-pluie* are not expected. And this is the case for the majority of the Canadian French speakers questioned. Instead, [pəplɥi] is obtained, with the copy of the first consonant and a following schwa. So, we suggest that what is associated to the initial site corresponds to the first consonant /p/ and the empty vowel. The OCP (obligatory contour principle), preventing the two /p/’s being adjacent, does the rest and forces the schwa epenthesis into the empty vocalic position. This is illustrated in (16).



In fact, cases of reduplication on words with complex consonantal initial are extremely rare (at least, we haven’t found much). Here is a small list of our findings in (17).

- (17) [bøbra] from *bras* ‘arm’
 [føfløær] from *fleur* ‘flower’
 [føfrɥil] from *fruit* ‘fruit’
 [gøglas] from *glace* ‘ice’
 [pøplɥil] from *pluie* ‘rain’
 [pøplym] from *plume* ‘feather’

The data in (17) put forward a fact discussed in the first section, that is if words of all languages are represented at a segmental level by a strict consecution of consonants (C) and vowels (V). The Canadian French data offer an answer. What is striking about the representation of the diminutive in (16) is the epenthesis of a schwa after the /p/. This would not be expected within a theoretical framework stipulating that the two consonants of increasing sonority form a complex onset. We would expect a situation where the other vocalic segments could come occupy the V position, for example the /ɥ/ or /i/, as (18) shows.

- (18) 

The glide /ɥ/ or the vowel /i/ could associate with the vocalic position. We would then expect to find [pyplɥil] or even [piplɥil], but this is not the case for all our Canadian French informers. So, if we suppose that the word *pluie* contains an empty vocalic position between the /p/ and the /l/ and that reduplication implies the copy from left to right of the segments into the initial site, the /p/ and the empty vowel will be reduplicated. The schwa epenthesis is a consequence motivated independently from the reduplication process. From now on, we can assume that French is a strictly CVCV language.

In section 2, we have discussed the necessary conditions for a word formation process to be productive. So, we have seen that productivity was related to the semantic and phonological restrictions imposed by the model. Diminutive reduplication on nouns beginning with a consonant cluster is not productive and this is not surprising

if we consider the situation described in (16). Of all the phonological content of the base, only the first consonant is (really) reduplicate. The semantic value conveyed by the segments is partly lost in the process of reduplication. Moreover, we notice that there is an additional phonological restriction in (17) comparing to reduplications in (9) and (12): the schwa epenthesis. Defining productivity as we did, it is clear that reduplications on nouns with complex consonantal initial are less expected. Nevertheless, the structure of those diminutives in French is the result of the presence of an initial CV site, at least in front of the nouns. In search for cross-linguistics data supporting our hypothesis concerning an initial site, Ancient Greek also present interesting facts to be considered in this paper and will be the subject of the next section.

3.2. Perfective formation in Ancient Greek

A type of reduplication similar to the one describe previously operates in Ancient Greek to form perfective. It consists of a reduplication in front of the base of the first consonant followed by the vowel /e/. Here are some examples in (19) drawn from Froli (2001: 47).

- | | | | |
|------|----|-----------------------|--|
| (19) | a. | leluka | from <i>luo</i> 'to loose' |
| | | pepaideuka | from <i>paideuo</i> 'to educate' |
| | b. | gegrap ^h a | from <i>grap^ho</i> 'to write' |
| | | beblap ^h a | from <i>blapto</i> 'to harm' |

The data in (19a) are not surprising and look like those in (9). Lowenstamm (2002) proposes that the perfective formation in Ancient Greek is realized on the initial CV site, exactly as the French diminutives, with a vowel fixed by the perfective paradigm. The form *leluka* is then obtained instead of **luluka* as we would expect if the vowel was also reduplicated. For the reduplications in (19b), the situation is similar to the one in (17). If we suppose that the initial CV is the site for perfective reduplication, consonant clusters won't be able to reduplicate. This is what is observed, represented in (20).

- (20)
- | | | | | | | | |
|---|----|---|---|---|---|---|---|
| c | v- | c | v | c | v | c | v |
| ↑ | ↑ | | | | | | |
| k | t | i | k | t | i | k | a |
- [kektika] from *ktizo* 'to build'

The difference between this process and (16) resides in the quality of the reduplicated vowel. As the vowel in (16) is realized by the epenthesis of a schwa in the empty vocalic position of the initial site, the vowel /e/ in (20) is constant and is ruled by the paradigm of the perfective formation.

If we resume what we tried to show until now, we can say that the presence of an initial CV site is motivated morphologically and has phonological consequences on reduplication. The illustration of the diminutive reduplications in French has shown that words can be reduplicated following a specific phonological pattern, that is to say by the copy at the left of the base of the first consonant and vowel. This pattern ensues from the initial CV, where the segmental positions are restricted to a consonantal segment and a vocalic segment. In addition, the diminutives in Canadian French and the perfectives in Ancient Greek also support this hypothesis. In the next section, we will try to bring out a recurrent question in the literature: the status of the phonological content of the aspirated and nasalized segments.

4. ASPIRATES AND NASALS

What we will do now is reduplicate words containing aspirated segments (Ancient Greek) and nasalized segments (French). Those phonological items have been dealt with ambiguity in the literature. Some authors treat them as unique segments occupying a single segmental position, while some others think that they are groups of segments occupying several skeletal positions. Diminutive reduplication offers a new way of analyzing aspirates and nasals, and thus clarifying this ambiguity, at least for Ancient Greek and French.

In Ancient Greek, there are verbs containing an aspirated consonant at initial. When the perfective reduplication is formed, the

data in (21) are obtained, with the remarkable impossibility to have the aspiration reduplicated.

- | | | | |
|------|-------------------------|---|---|
| (21) | kek ^h oreuka | * k ^h ek ^h oreuka | from <i>k^horeuo</i> ‘to dance’ |
| | kek ^h areka | * k ^h ek ^h areka | from <i>k^hairo</i> ‘to be delighted’ |
| | tet ^h aumaka | * t ^h et ^h aumaka | from <i>t^haumad^ho</i> ‘to admire’ |

The process of perfective formation by reduplication implies the copy of the first consonant and the insertion of the vowel /e/. If we analyze aspirates as only one phonological segment, we have to explain why the forms where the aspirated consonant is reduplicated are ungrammatical, by a rule of deletion of the aspiration, for example. Conversely, if we consider that the aspiration occupies its own segmental position, then no special rule is needed to explain why the occlusive only is reduplicated. These two stories are illustrated below.

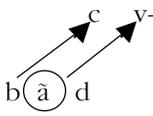
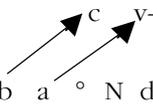
- (22) a.
- | | | | | | | | | | |
|--|---|---------------|----|---------------------------|---|---|---|---|-------|
| | | c | v- | c | v | c | v | c | v |
| | | | e | | | | | | |
| | (k ^h)o... | | | k ^h | o | r | e | ° | u k a |
| | /k ^h ek ^h oreuka/ | deletion rule | | [kek ^h oreuka] | | | | | |
- b.
- | | | | | | | | | | | | |
|--|---------------------------|---|----|---------|---|---|---|---|-------|---|---|
| | | c | v- | c | v | c | v | c | v | c | v |
| | | | e | | | | | | | | |
| | k ° h o... | | | {k ° h} | o | r | e | ° | u k a | | |
| | [kek ^h oreuka] | | | | | | | | | | |

In (22a), the only way to obtain the perfective form without the aspiration on the initial C is to add a rule, for example of deletion, complicating the process. A more economical suggestion is made in (22b), that is to consider the aspiration independent of the occlusive. We get back there the reduplication process as we described it in (20).

The same reasoning can be made concerning nasals reduplications in Canadian French. When a noun containing a nasal vowel is reduplicated to form the diminutive, the vowel is reduplicated without the nasality, as is shown by the examples in (23).

- | | | | |
|------|---------|----------|----------------------------|
| (23) | [babād] | *[bābād] | from <i>bande</i> ‘group’ |
| | [dedēd] | *[dēdēd] | from <i>dinde</i> ‘turkey’ |
| | [ʒaʒâb] | *[ʒâʒâb] | from <i>jambe</i> ‘leg’ |

Many works on nasality, notably Paradis & Prunet (2000), discuss the number of segmental positions that nasal vowels must occupy. Data in (23) suggest that nasality is separate from the vowel it nasalizes, and so that nasals have to be considered as a composition of two segments. If not, forms like *[bābād], *[dēdēd] and *[ʒâʒâb] would be expected. The two possible situations are illustrated in (24).

- | | | | | | | | | |
|------|----|---|---|----|---|----|---|---|
| (24) | a. |  | c | v | c | v | | |
| | | | | | | | | |
| | | | b | ã | d | ° | | |
| | b. |  | c | v | c | v | c | v |
| | | | | | | | | |
| | | | b | {a | ° | N} | d | ° |

When nasality is represented as part of the vowel (situation (24a)), the consequence is that the vowel AND nasality are reduplicated in one segmental position. When nasality is independent of the vowel (situation (24b)), then only the vowel can be reduplicated. The simplest way to explain why nasality is not reduplicated in the diminutive formation in French is by stipulating an analysis like the one in (24b).

More research needs to be done in the area of the segmental complexity in order to determine the true composition of aspirates and nasals. However, data from Ancient Greek and French examined above present interesting characteristics to be considered in this study. On one hand, they provide an additional argument for the presence of an initial site the size of a CV, and on the other hand, they show that it is better to give a bi-segmental status to the so-called complex segments like aspirated consonants and nasal vowels.

5. CONCLUSION

Many facts have been presented in this article to support the hypothesis of a CV site at the initial of words of all major categories. We have first seen that diminutive formation by reduplication in French is explainable by a morphophonological process occurring into the site. We have illustrated its productivity by showing that there were only very few semantic and phonological restrictions on this kind of reduplications. Moreover, the phonological pattern of the reduplication has been analyzed as being imputed to the initial CV site. We have then shown that the diminutives in French and the perfectives in Ancient Greek were formed by the strict reduplication of the first consonant and the following vowel of the base.

Predictions were made concerning the non reduplication of consonant clusters. A particular process existing in Canadian French was presented in order to confirm this hypothesis. In the case of nouns beginning with a complex consonantal initial, only the first consonant is reduplicated, followed by a schwa epenthesis. We have concluded that consonants of a cluster must be separated by an empty vocalic position. Thus, this is supporting the suggestion of Lowenstamm (1996) that words should be universally represented by a strict succession of consonants and vowels.

The hypothesis of an initial CV site provides two major openings. The first one is that it explains why consonant clusters cannot reduplicate. Indeed, we have seen in this paper that only the first consonant of a cluster is reduplicated, in Canadian French as in Ancient Greek. The second one concerns the composition of aspirates and nasals. The impossibility of reduplication in the case of an aspirated consonant and a nasal vowel suggested that those segments were occupying more than one segmental positions.

It is clear that this paper does not constitute the final word on this subject. However, it provides many leads on the treatment of the diminutive reduplication in French, as well as the perfective formation in Ancient Greek.

FOOTNOTES

- ¹ See also Bendjaballah (1995), Scheer (1996), Ségéral (1995).
- ² The reader is referred to Kaye, Lowenstamm & Vergnaud (1985, 1990) for more information and precisions on Government Phonology.
- ³ This argumentation is based on the analysis of Czech vowel/ø alternations. Readers are asked to consult Scheer (1996) for demonstration of the complex situation in Czech.
- ⁴ This compensatory lengthening happens when the first consonant of the base resists gemination. (cf. Lowenstamm (1999:12))
- ⁵ We only suggest that a way of understanding the data in (13b) is to consider that the copy merged into the CV site, like we can imagine it does in compounding. Naturally, this proposition needs to be further explored, a thing we will not do here.
- ⁶ Some speakers of Canadian French produce a diminutive form where the first two consonants are reduplicated, followed by a schwa, for example [frəfrɥi] for 'little fruit'. Those cases, not very representative though, won't be dealt with in this paper.
- ⁷ We have also run the test on French speakers, but since the nasals are less emphasize for them, we don't have a clear proof of the non reduplication of the nasalized vowel. Phonetic analysis should be made in order to have a precise answer.

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