

# The Semantics of Eventive Suffixes in French\*

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This paper examines the properties of three of the suffixes available to create eventive deverbal nouns in French, namely *-age*, *-ment* and *-ion*. The explored hypothesis is that these suffixes have an abstract semantical and aspectual value which contributes to explain why verbs select different suffixes in the operation of nominalisation, as well as the semantical differences between two nominalisations derived from the same verbal base with different suffixes.

## 1. Introduction

Eventive deverbal nouns (henceforth EDNs) can be formed with at least three suffixes in French, namely *-age*, *-ment* and *-ion*. The goal of this paper is to explain the distribution of these three suffixes among EDNs in contemporary French. Classically, it is generally taken for granted that there is nothing to be explained to begin with. Indeed, one often assumes that the distribution of these suffixes cannot be motivated in synchrony, since the nouns in which they enter have often been copied from the Latin ones. Therefore, the argument goes, if the distribution of the suffixes depends on the semantics of the verbal bases, it is on the Latin ones.

However, this “null” hypothesis is not completely satisfactory for several reasons.

The first counter-argument comes from *neologisms*. Very often, native speakers tend to choose the same suffix(es) to form new nouns from new verbs, and this reflects in corpora. For instance, the verb *doper* ('dope', born in 1903 according to *Le Petit Robert*) is nominalised more than 800 times in *-age*, 3 times in *-ment*, and never in *-ion* on Internet.<sup>1</sup> This regularity is left unexplained if one assumes that these suffixes do not have a syntax/semantics guiding the nominalising process. Besides, it is not rare that even when a noun formed with a verbal base *v* and a suffix *S<sub>1</sub>* already exists in French, subjects create another noun with the same base *v* and another suffix *S<sub>2</sub>*. For instance, while *indignation*

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<sup>1</sup> The searches were made between December 2007 and April 2008.

already exists, one quite often finds *indignement* in corpora. One could argue that this kind of neologisms is simply the sign of a certain lexical incompetence, but then, one does not explain why *indignage* is never created.

The second counter-argument comes from *pseudo-nouns*. Pseudo-nouns are built on pseudo-verbs, that is invented, meaningless but morpho-phonologically well-formed French verbs. One observes that subjects tend to have intuitions on the semantical differences between pseudo-nouns built on the same base *v* with different suffixes  $S_1, S_2...$  (Dumay & Martin 2008). Let us take for instance the pseudo-verb *toliner*. To the question “*Imagine that the non-existing verb toliner describes an action. If you want to describe an action of this type which is not finished, would you rather use tolinage or tolination?*”, the subjects preferably choose the *-age* EDN. This kind of intuitions can certainly not be explained if the semantic value of these suffixes is empty.

A third counter-argument comes from the *semantical systematicity* taking place between EDNs derived from different suffixes. Often, the semantical relation taking place between nouns built with a suffix  $S_1$  and nouns built with a suffix  $S_2$  is similar from base to base. For instance, the semantical difference we document below between  $^{\circ}miaulage^2$  and *miaulement* (from *miauler* 'meouw') is the same as the one between *secouage* and *secouement* (from *secouer* 'shake'). Again, this cannot be explained if the semantics of these suffixes is supposed to be empty.

The alternative hypothesis explored here is that these suffixes have an abstract semantical value, which contributes to explain

- a) why verbs select different suffixes in the operation of nominalisation, given the additional premisses that the meaning of the verbal stem and the one of the suffix must match
- b) the interpretation of existing EDNs, including the semantical differences of two EDNs derived from the same verbal base but with different suffixes
- c) the acceptability of neologisms

For this study, two kinds of empirical data have been investigated, namely

- a) existing EDNs listed in dictionaries (*Le Petit Robert, Le Littré* and *Le Trésor de la Langue française*),
- b) existing EDNs which are present in corpora (e.g. on Internet) but not listed in dictionaries. These EDNs are prefixed with “ $^{\circ}$ ”.

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<sup>2</sup> The meaning of the symbol  $^{\circ}$  will be explained below.

The paper is divided as follows. Firstly, I introduce a new indicator for the reading of DNs under study, namely the eventive one (section 2). Secondly, I present the results of an inquiry on the impact that the aspectual category of the verbal base might have on the choice of the suffixes. Basically, the results are pessimistic: no clear correlation emerges. However, the following sections present data suggesting that other aspectual values of the verbal base play a role here. I address successively the competition between (i) *-age* and *-ment* (section 4), (ii) *-ment* and *-ion* (section 5) and (iii) *-age* and *-ion* (section 6).

## **2. Selecting the eventive reading of deverbal nouns**

For this preliminary study, DNs built with different suffixes will only be compared on their *eventive* reading. I will not try to differentiate the suffixes by the range of readings they are supposed to yield as in Lüdtke (1978), Heinold (2005) or Uth (this volume). The distribution of the suffixes will not be investigated either on the stative or referential readings of DNs.

Many – if not all – of the tests which are supposed to diagnose the eventive reading of DNs raise serious problems once applied to French. For instance, Roodenburg (2006) shows that contrary to what is predicted by Grimshaw's (1990) analysis, DNs can pluralise on their eventive reading in French:

- (1) Le général a filmé les désamorçages de bombes lourdes par les recrues.  
(Roodenburg, *id.*)  
The general filmed the disassemblies of heavy bombs by young soldiers

Secondly, modifiers like *fréquent* ('frequent') or *constant* ('constant') do not allow to differentiate stative and eventive readings, since they are compatible with nouns clearly denoting states, like *maladie* or *état*:

- (2) C'est une maladie constante du projet républicain: il se retourne contre lui-même. (Internet)  
It is a constant illness of the republican project: it turns against itself
- (3) Le bonheur est un état constant. (Internet)  
Happiness is a constant state

*Progressif* ('progressive') or *graduel* ('gradual') have also been used as diagnostics of eventivity (cf. e.g. Meinschaefer 2005). However, even if these adjectives are indeed possibly incompatible with stative DNs, they also reject DNs like *effarement* ('bemusement') which have an eventive reading, but denote an event which is so quick that it is not easy to emphasize its development, as it is arguably required by these two modifiers, cf. (3).

- (3) #L'effarement progressif de Pierre  
The progressive bemusement of Pierre

Given the confusion that might be caused by the use of these tests, I propose to introduce another construction as a diagnostic of eventivity, namely the predicate *assister à* ('to witness'/'to attend'). Contrary to the perception verb *voir* ('see') which imposes much less restrictions on its object, the verb *assister à* robustly rejects objects denoting individuals, states or facts and exclusively selects events:

- (4) \*J'ai assisté au livre.  
I witnessed the book
- (5) ??J'ai assisté au fait qu'il était parti.  
I witnessed the fact that he was gone
- (6) ??J'ai assisté à son état.  
I witnessed his state

Besides, contrary to *progressif* or *graduel*, it accepts any kind of eventive DNs, including the ones like *effarement* denoting a very short event:

- (7) J'ai assisté à l'effarement de Pierre.  
I witnessed the bemusement of Pierre

In line with traditional analyses of perception reports (e.g. Vlach 1983), I will assume that the DN denotes the event which has to be witnessed for the sentence to be true, and only this event. For instance, according to this principle, *soins* ('treatment') only denotes the action of the doctor, cf. (8), while *guérison* ('curing') only denotes the change of state of the patient, cf. (9):

- (8) J'ai assisté aux soins.  
I witnessed the treatment
- (9) J'ai assisté à la guérison.  
I witnessed the curing

If we assume, besides, that modifiers are predicates of the event denoted by the DN, we generally point to the same conclusion with regard to the denotation of the DN. For instance, for (10) to be true, the action of the doctor only has to be quick (the curing itself can be slow), and for (11) to be true, the change of state of the Patient only has to verify this property (the treatment itself can be slow):

- (10) Des soins rapides ont eu lieu.  
A quick treatment occurred
- (11) Une guérison rapide a eu lieu.  
A quick curing occurred

In the next section, I show that there is no clear correlation between the distribution of the suffixes in EDNs and the (a)telicity of its verbal base.

### 3. No impact of the (a)telicity of the verb on the choice of the suffix

A robust difference between eventive suffixes under study is that they do not manifest the same preferences for determiners. For instance, while mass DPs built with *du*, *de la* or *des* (French equivalents of bare nouns) are very frequent with *-age*, they are comparatively much less common with *-ment*:

- (12) C'est du **déchiffrage**. (434 occurrences on Internet)  
It is 'du' deciphering
- (13) C'est du **déchiffrement**. (2 occurrences on Internet)
- (14) C'est 'du' **gribouillage** (930 occurrences on Internet)  
It is du scribbling
- (15) ?C'est du **gribouillement**. (0 occurrence on Internet)  
It is 'du' scribbling

This fact certainly underlies the intuition that *-age* EDNs are “more massive”. Let us combine this observation with an old hypothesis of Mourelatos (1978), namely that count nouns are derived from telic verbs, while mass nouns are derived from atelic ones. The prediction which naturally follows from this combination is that the (a)telicity of the verbal base may partly play a role in the choice of the suffix. For instance, if Mourelatos is right, given that *-age* DNs are more frequent with mass nouns, we would expect that *-age* DNs will preferably be derived from atelic verbs.

To check whether the (a)telicity of the verb can indeed partly drive the choice of the eventive suffix, I tested 300 causative psychological verbs with regard to this aspectual value. For this test, I always selected the same kind of object, namely a bounded one ([+SQA] in the terminology of Verkuyl 1972).<sup>3</sup> For instance, according to the traditional adverbial tests, *embêter* ('to tease') has the atelic reading only, cf. (16), while *séduire* ('to seduce') has an atelic or a telic reading, cf. (17):

- (16) J'ai embêté Pierre #en dix minutes/pendant dix minutes.  
I teased Pierre in ten minutes/for ten minutes
- (17) J'ai séduit Pierre en dix minutes/pendant dix minutes.  
I seduced Pierre in ten minutes/for ten minutes

To each of these verbs were associated

- a) The existent DN(s) (e.g. *emballement* 'enthusiasm' for the psych-verb *emballer*, 'to thrill')
- b) The available (telic and/or atelic) reading(s) (tested with a [+SQA] object)

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<sup>3</sup> With a non-bounded object, the yielded VP would invariably be atelic.

- c) The other meaning(s) this verb might have (e.g. the physical verb *emballer* 'to wrap' was linked to the psych-verb *emballer*) and, again, the available telic/atelic reading for this new sense<sup>4</sup>
- d) The available DN(s) for the other sense(s) (e.g. *emballage* 'wrapping' was linked to the physical verb *emballer*)

The results of the inquiry are summarised in Table 1 (a fourth suffix *-erie* was also taken into account for the inquiry). I gave the results for atelic *and* telic readings because for some verbs, none of the two is acceptable. The number of DNs containing a certain suffix is put in parenthesis. As the same verb may have different aspectual value on its different readings, the DN is counted twice if it nominalises two different readings.

	<i>-ment</i> (194)	<i>-ion</i> (146)	<i>-age</i> (49)	<i>-erie</i> (16)
Telic r. of the verb OK	48,2%(95)	56,8%(83)	59,1(29)	31,2(5)
Atelic r. of the verb OK	70,5%(139)	71,6%(104)	77,5%(39)	93,7%(15)
No telic r. for the verb	50,2%(99)	41%(60)	36,7%(18)	62,5%(10)
No atelic r. for the verb	23,8%(47)	21,9%(32)	18,3%(9)	6,2%(1)

Table 1

As one can see, no clear correlation emerges between the choice of the suffixes and the aspectual value of the verbal base. The results then indirectly falsify the Mourelatos hypothesis. The *-erie* suffix is the only one to exhibit a clearly different pattern, but the number of corresponding nominalisations is so low that some cautiousness seems in order here.<sup>5</sup> Note that according to A. Fabregas (p.c.), the (a)telicity of the verbal stem seems irrelevant for the choice of the suffix in Spanish too.

These negative results are not very surprising in view of the fact that quite a few verbs have inverse aspectual values under two different readings, but nominalise the same way:

- (18) L'éponge a absorbé la flaque en/??pendant dix minutes. (>absorption)  
The sponge absorbed the puddle in/for ten minutes
- (19) Pierre m'a absorbé ??en/pendant dix minutes. (>absorption)  
Pierre absorbed me in/for ten minutes

<sup>4</sup> "Other" meanings should not be interpreted as "derived" or "secondary" meanings. In the case of psych-verbs, the physical reading is of course very often the first one (of which the psychological reading is derived).

<sup>5</sup> Note that a finer typology of atelic readings may change the results; for the test, no distinction was made between the case where the durative adverbial scopes over the event and the one where it scopes over the resultant state.

However, we will see in the following sections that other aspectual values of the verbal stem play a role in the distribution of suffixes.

#### 4. -age versus -ment

##### 4.1 Two previous claims

Two previous claims have been made about the rivalry between the suffixes *-age* and *-ment*. According to Dubois (1962) and Dubois & Dubois-Charlier (1999), *-age* is selected by transitive verbs, and *-ment* by intransitive ones. Verbs like *siffler* ('whistle', 'blow') or *froisser* ('crease') confirm this generalisation, since they nominalise with *-age* on their transitive reading and with *-ment* on their intransitive one:

- |      |                               |   |  |
|------|-------------------------------|---|--|
| (20) | L'arbitre a sifflé le joueur. | > | Le sifflage/#le sifflement du joueur par l'arbitre |
|      | The referee blow the player   |   | The blowing of the player by the referee           |
| (21) | Pierre siffle en travaillant. | > | Le sifflement/#le sifflage de Pierre               |
|      | Pierre whistled while working |   | The whistling of Pierre                            |
| (22) | J'ai froissé ma jupe.         | > | Le froissage de la jupe                            |
|      | I creased my skirt            |   | The creasing of my skirt                           |

However, this rule also suffers counter-examples. Firstly, some transitive verbs can nominalise in *-ment*, cf. (23):

- |      |                      |   |                           |
|------|----------------------|---|---------------------------|
| (23) | J'ai froissé ma jupe | > | Le froissement de la jupe |
|      | I creased my skirt   |   | The creasing of my skirt  |

Sometimes, they even must do so. For instance, on its psychological transitive reading, *froisser* 'offend/bruise' cannot nominalise in *-age*, but only in *-ment*. Secondly, some intransitive verbs cannot nominalise in *-ment* (cf. *arriver*, 'to arrive' > *arrivage*, 'arrival/delivery'; ??*arrivement* does not exist anymore) or select both suffixes (cf. *miauler*, 'to meouw' > °*miaulage*, *miaulement* 'meouwing').

Kelling (2004) admits that *-ment* can be selected by transitive verbs. However, according to her, the two suffixes still differ then in that *-age* is supposed to be selected when the subject of the transitive verb is an Agent, while *-ment* is selected in other cases:

- |      |                            |   |                           |
|------|----------------------------|---|---------------------------|
| (24) | <i>x</i> a gonflé <i>y</i> |   |                           |
|      | <i>x</i> inflated <i>y</i> |   |                           |
|      | If <i>x</i> is an Agent:   | > | le gonflage de <i>y</i>   |
|      |                            |   | The inflating of <i>y</i> |

If  $x$  is not an Agent: > le gonflement de  $y$   
The inflating of  $y$

But this generalisation also suffers counter-examples. As already noted by Heinold (2005), transitive verbs can nominalise in *-ment* even when the context indicates that the subject is clearly agentive. In fact, I would add that they even sometimes prefer *-ment* to *-age*, as in this example:

(25) Le gonflement/?le gonflage des chiffres par certaines sociétés. (Heinold, *id.*)  
The inflating of figures by certain companies

## 4.2 A multi-feature analysis

Given these counter-examples to the two previous claims, I will here admit that in principle, *-ment* and *-age* can both nominalise transitive or intransitive verbs. But the preferences observed by the authors are certainly correct, and should be captured by the analysis as well as their exceptions. However, these exceptions also suggest that it is hopeless to try to capture the difference between two kinds of nominalisations by one feature only.

In what follows, I distinguish *-ment* and corresponding *-age* EDNs by four properties  $P_1$ ,  $P_2$ ,  $P_3$  and  $P_4$ . In the *paradigmatical* case (arguably the one targeted by previous authors), the two competing nouns derived from the same base differ from each other by each of these four properties. However, in some cases, the verbal base itself “neutralises” some of these properties, because its semantics does not allow to exploit it (see below). In this case, the other properties still allow to differentiate the two competing EDNs.

This analysis presupposes a more fine-grained classification of verbal bases than in previous work, because one should be able to identify the “active” or “neutralised” properties in the nominalisation process. In sum, the relevant properties concern (i) the length of the denoted eventive chain (section 4.2.1), (ii) the degree of agentivity of the subject (section 4.2.2), (iii) the incremental relation between the event and the Theme (section 4.2.3), and (iv) the ontological domain to which the denoted eventive chain pertains (section 4.2.4).

### 4.2.1 Property $P_1$ : length of the eventive chain

The first relevant property concerns the mereological relation between the two events  $e_{ment}$  and  $e_{age}$  respectively denoted by an *-ment* EDN and the corresponding *-age* EDN. This property is 'active' with verbal bases which present a certain type of semantical underspecification, namely bases which can denote longer or shorter eventive chains. Firstly, this is the case of verbal bases of which are derived verbs enduring the causative/inchoative alternation. At least, these bases are assumed to



be underspecified in the “Y-model” proposed by Piñón (2001a), where both the transitive and intransitive version of causative/inchoative verbs are derived from a same (underspecified) base, itself being derived from the adjective (see Figure 1 below). Piñón offers a lot of cross-linguistical empirical arguments showing that this model is to be preferred to the alternative ones, where the causative verb is supposed to be derived from the inchoative one (traditional model), or the inchoative one from the causative one (Levin & Rappaport 1994’s model).

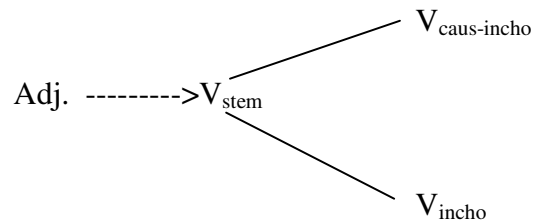


Figure 1: the Y-model

Secondly, it is also the case of bases from which are derived transitive (ex: *shake*) or intransitive (ex: *meouw*) verbs which can either denote a single event or an iteration of it.

I propose that with underspecified bases of this kind, *-age* selects the longer reading, while *-ment* selects the shorter one.<sup>6</sup> Basically, with these bases,  $e_{ment}$  is always a (proper) subpart of  $e_{age}$  ( $e_{age} \supset e_{ment}$ ). Let us first examine the case of causative/inchoative bases.

**Causative/inchoative verbal bases.** With verbs enduring the causative/inchoative alternation, the witness test presented above allows to show that while *-age* EDNs denote the full causation, the corresponding *-ment* ones denote the change of state of the object only:

- (26) Pierre a assisté au gonfl**age** des ballons.  
 Pierre witnessed the inflating of the balloons  
 >Pierre witnessed the whole causation
- (27) Pierre a assisté au gonfl**ement** des ballons.  
 Pierre witnessed the inflation of the balloons  
 >Pierre witnessed the change of state only

$e_{ment}$  is then clearly a subpart of the corresponding  $e_{age}$ . Recall however that as already noted above (cf. (25)), *-ment* EDNs can be used with a *par*-phrase denoting the Agent. In this case, the whole causation must be denoted by the

<sup>6</sup> Funnily, at least two of the informants to which I present some of the relevant *-ment/-age* pairs seem to justify “phonologically” their choice in saying that “-aaaaage is longer”. Maybe some iconic effect between semantics and phonology is at play here (either *-age* has a better phonology to denote longer events, or subjects perceive *-age* nominals as denoting longer events and try to justify their intuition phonologically).

Noun Phrase, exactly as with *-age* EDNs. This is confirmed by the *witness* test; while in (27), Pierre only witnessed the change of state, in (28), he has to attend the whole causation:

- (28) Pierre a assisté au gonflement des ballons par X.  
 Pierre witnessed the inflation of the balloons by X  
 >*Pierre witnessed the whole causation*

However, even if (26) and (28) have the same truth conditions, they can still differ compositionally. While in (26), the deverbal noun itself is responsible for the denotation of the causing event, in (28), the interpretation of this event results from the composition of the deverbal noun denoting a change of state with the *by*-phrase denoting an Agent of an event causing this change of state. As the *by*-phrase is responsible for the interpretation of the causing event, this event does not have to be interpreted in absence of this adjunct PP.<sup>7</sup>

The fact that with these verbal bases, *-age* EDNs target the causative reading of the base while *-ment* EDNs select the inchoative one accounts for the previously noticed preference of *-age* EDNs (vs *-ment* ones) for transitive verbs (vs intransitive ones).

**Verbal bases with an iterative/non-iterative reading.** With intransitive verbs like *miauler* ('meouw') and transitive ones like *secouer* ('shake'), the verbal stem can also denote a longer or shorter event in the sense they can denote a single event or an iteration of it. And again, with these bases, *-age* EDNs select the longer reading (the iterative one), while *-ment* ones select the shorter one (the single-event one). For instance, while *miaulement* and *secouement* denote only one production of sound/ one movement, *°miaulage* or *secouage* entail an iteration of them.<sup>8</sup> So again, the relation  $e_{age} \cdot e_{ment}$  is verified, although in a

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<sup>7</sup> An interesting parallel can be made with the combination of *durch*-phrases with causative and non-causative changes of state predicates studied by Solstad 2007:

- (i) Ein Polizist wurde *durch einen Schuss* aus der eigenen Dienstwaffe getötet. (Solstad, *id.*)  
 A policeman was killed *by a shot* from his own service weapon  
 (ii) Ohnesorg starb *durch einen gezielten Schuss*. (*ibid.*)  
 Ohnesorg died *through an accurate shot*

As Solstad argues, even if we have a causative predicate in (i) and an inchoative one in (ii), it seems that the semantic representation assigned in (i) and (ii) after composition with *durch* would be similar, in the sense that both sentences include a causing event *e* and a specification of this causing event. However, while it is the causative predicate which is responsible for the introduction of the cause component in (i), it is the *durch* phrase which performs this job in (ii).

Of course, the *durch*-phrase differs from our *par*-phrase in that the latter denotes the Agent of the (implicit) cause component, while the latter directly denotes the cause component itself.

<sup>8</sup> According to A. Fabregas (p.c.), Spanish suffixes also differ from each other on this point: *sacudimiento* denotes an iteration of shaking (for example, if the house shakes for a while as an

different way. In favour of this analysis, note that when headed by a noun like *session* which selects the iterative reading, the *-ment* EDNs must bear the plural morphology, which is not the case of the *-age* ones:

- (29) Une session de °miaulage/secouage  
A shaking/meouwing session
- (30) \*Une session de miaule**ment**/secou**ement**  
A shaking/meouwing session
- (31) Une session de miaule**ments**/secou**ements**  
A shaking/meouwing session

Besides, subjects tend to find (32) more natural than (33):

- (32) Plusieurs miaule**ments** (secou**ements**) font ensemble un °miaulage (secou**age**).  
Several meow-**ments** (shake-**ment**) make together a meow-**age** (shake-**age**)
- (33) ?Plusieurs °miaulages (secou**ages**) font ensemble un miaule**ment** (secou**ement**).  
Several meow-**ages** (shake-**ages**) make together a meow-**ment** (shake-**ment**).

The idea that *-age* has an iterative value with some verbs is not entirely new. It was already proposed by Bally (1965). For Old French, Uth (2007) argues that non-eventive *-age* nouns (more precisely nouns denoting a non-eventive entity) systematically denote *groups* or *kinds* (which are necessarily instantiated by non-singular entity, cf. Chierchia 1998). This suggests that *-age* has this iterative value in eventive *and* non-eventive nouns.

**Verbal bases neutralising  $P_I$ .** As already mentioned, a property differentiating two competing EDNs can be neutralised with some verbal bases. We will show here that  $P_I$  is neutralised with verbs having a transitive and an intransitive reading (henceforth TIVs), but without enduring the causative/inchoative or iterative/non-iterative alternations. This is for instance the case of *pousser*.

Recall that among TIVs, *most* of them, like *gonfler* ('inflate') display the causative/inchoative alternation, ie entail a causation on their transitive use, cf. (34), and a change of state on their intransitive one. However, verbs like *pousser* 'push' or *tirer* 'pull' are *not* causative on their transitive use. They only entail an

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effect of an earthquake), and *sacudida* denotes a single instance of shaking (for example, if a bull hits a car only once, that is a *sacudida*). As this example already shows, there is no correspondence between the French *-ment* and the Spanish *-miento*. See Fabregas (2007) for an analysis of affix rivalry in Spanish.

event performed by the subject, but no change of state, cf. (35) (cf. Jackendoff 1990 on *push*, Stein 2007 on *pousser*):

- (34) J'ai gonflé le ballon, #mais il n'a pas gonflé  
I inflated the balloon, but it didn't inflate
- (35) J'ai poussé la voiture, OK mais elle n'a pas bougé (Stein 2007)  
I pushed the car, but it didn't move

It would be weird to assume that on one of its readings, the verbal stem of these verbs denotes a change of state  $e'$ , since the verb itself does not entail it. In fact, it is more natural to assume that contrary to *gonfl*-stems, *pouss*-stems univocally denote the event  $e$  performed by the subject  $x$ , and never the change of state  $e'$  (possibly) endured by  $y$ . Then, once combined with *-ment*, the resulting EDN corresponds naturally to the event  $e'$  involving  $x$ . *Poussement* is indeed defined as the “action of pousser” in the dictionary *Le Littré*. As we just saw, this interpretation is available with *gonfler*-verbs when a *par*-phrase is implicated only:

- (36) J'ai assisté au pousse**ment**  
>the event involving  $x$  **must** be seen
- (37) J'ai assisté au gonfle**ment**  
>the event involving  $x$  **can** be seen

Given the fact that with *pousser*-verbs, bases do not exhibit the relevant underspecification (they do not have a “shorter” or “longer” reading), the *-age* DNs do not denote a longer event as the corresponding *-ment* ones as in the previous case. The property  $P_1$  is then “neutralised”. *-ment* EDNs denote the same kind of eventive chain than corresponding *-age* ones.<sup>9</sup>

#### 4.2.2 Property $P_2$ : agentivity

In the previous section, I show that *-age* and *-ment* EDNs can differ by the length of the denoted eventive chain. I will now address one of the other features differentiating the two suffixes, including when the first one is neutralised, as for *pousser*-verbs.

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<sup>9</sup> One could wonder what exactly denote *pousser*-bases and how many of them we have to assume. In fact, it is very likely that *pousser*-bases invariably denote the performance of  $x$ ,  $x$  corresponding to the subject of the transitive or the intransitive verb. In both readings, this performance can be defined the action of exerting a force in a direction that goes away from  $x$ . For instance, the event denoted in (38a) can be described as a pressure performed by Pierre away from Pierre, and the one denoted in (38b) as the pressure exerted by the tooth and away from the tooth:

- (38) a. Pierre pousse la table.  
Pierre is pushing the table
- b. La dent pousse.  
The tooth is growing

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The first of them concerns the thematic role of the subject. As already suggested by Kelling (2004), *-age* EDNs are more agentive than *-ment* ones. My claim goes in the same direction, but differs from hers on three points. Firstly, instead of stating that *-ment* EDNs cannot be agentive while *-age* EDN must (which cannot explain the acceptability of (25)), I will assume that while *-age* EDNs must be agentive, *-ment* ones tolerate this reading without imposing it. This first claim is illustrated by the contrast above:

(39) Le décollement des tuiles par le vent/ par l'ouvrier  
*The unsticking/removal of the tiles by the wind/by the worker*

(40) Le décollage des tuiles par #le vent/ par l'ouvrier  
*The unsticking/removing of the tiles by the wind/by the worker*

For instance, native speakers accept the *-age* version in (40) only in a context where a fictive intention is attributed to the wind.

Secondly, I will not assume with Kelling that for an EDN to be agentive, it has to attribute the role Agent to the subject, nor that EDNs derived from intransitive verbs cannot be agentive. This would impede us to explain why some unaccusative or unergative verbs like *arriver* or *miauler* nominalise in *-age*. Instead, I will assume that *-age* EDNs are “agentive” in the following way: *the eventive chain denoted by an -age EDN must begin with an action, or must have been triggered by an action (not denoted by the noun itself)*. So in two words, *-age* says “look for an intention”, either inside the denoted eventive chain, or outside it. With verbs like *décoller* (cf. (40)) or *miauler*, this constraint is very simply translated in identifying the event denoted by the EDN itself with the required action. For instance, it explains why (41) is only accepted by native speakers in a magical context where doors intentionally make noise:

(41) Le miaulement/#<sup>o</sup>miaulage d'une porte qui grince  
*The meouw-ing of a squealing door*

In the same way, *poussage* differs from *poussement* in that it suggests that *x* is a real Agent. This explains why *poussage* is often used to describe a (shipping) technique, as this technique 'intrinsically' implies an Agent endowed with intention, while *poussement* is preferred to nominalise the normally non-intentional process denoted by the intransitive reading translated with *grow* in English:

(42) La dent pousse > le poussement/#poussage de la dent  
The tooth is growing > the growing of the tooth.

But sometimes, the intransitive *pousser* can also be used agentively in the relevant sense:

- (43) Pouss**age** de poils [title of the mail in a forum]. Svp, comment faire pour que les poils poussent sur le torse? (Internet)  
Growing of hair. Please, how to proceed for hair to grow on the chest?

Crucially, (43) does not require a personification of the hair to be acceptable. Rather, the choice of *-age* is here justified by the (non default) context where the hair growing process (denoted by the noun) is intentionally triggered upstream through an action. This action is *not* denoted by the noun; as is confirmed by the witness test, cf. (44), but also by the fact that these EDNs nominalising the intransitive reading do not accept a *par*-phrase, cf. (45). This incompatibility is unexpected if the noun itself denotes the action performed by the referent of the *par*-phrase.

- (44) J'ai assisté au pouss**age** de ses poils.  
I witnessed the growing of his hair  
*I do not necessarily witnessed the action causing the growing event*
- (45) \*Le pouss**age** des poils par X  
The growing of the hair by X.

The same way, (41) could also be appropriate in a context where somebody plays with the door in order to provoke its meowing squealing. And again, the witness test and the distribution of the *by*-phrase suggests that this action cannot be denoted by the noun itself.

The *-age* EDN derived from the intransitive verb *arriver* must also be agentive in our sense. Indeed, contrary to *arrivée*, *arrivage* is “agentive” in that it implies that the change of state *e'* denoted by *arriver* is caused by an action *e* (not denoted by the noun). This is the reason why (47) is weird on the *-age* version: contrary to normal assumptions, it suggests that the arrival of meteorites was caused by an action.

- (46) L'arrivée/l'arriv**age** de légumes  
The arrival of vegetables
- (47) L'arrivée/#l'arriv**age** de météorites

However, according to the witness test, *arrivage* only denotes a change of state *e'*, just as *gonflement*:

- (48) J'ai assisté à l'arriv**age** des légumes.  
I witnessed the arrival of vegetables  
*>I witnessed the change of state only*

Besides, data show that the Agent of the action  $e$  who must have caused  $e'$  cannot be expressed by a *par*-phrase:

- (49) \*L'arriv**age** des légumes par les ouvriers  
The arrival of vegetables by the workers

In conclusion, *-age* EDNs are more agentive than *-ment* EDNs not because they impose the role Agent to the subject, but because they systematically signal the existence of an (intentional) action, either at the beginning of the denoted eventive chain, or upstream.

#### 4.2.3 Property $P_3$ : incrementality

An interesting fact which cannot be accounted for by  $P_1$  and  $P_2$  is illustrated by the contrast below, where two different senses of the same verb are used:

- |  |   |  |
|--|---|--|
| (50) Marie a intentionnellement plissé sa jupe<br><br>Marie intentionally pleated her skirt  | > | Le plissement/pliss <b>age</b><br>de la jupe<br>The pleating<br>of the skirt |
| (51) Marie a intentionnellement plissé les yeux<br><br>Marie intentionally squinted her eyes | > | Le plissement/<br>#pliss <b>age</b> des yeux<br>The squinting<br>of the eyes |

If only  $P_1$  and  $P_2$  are taken into account, *plissage* is expected to nominalise (51) as well as (50) (in both cases, the causative reading is selected, and the adverb *intentionally* signals the presence of an intentional action). The contrast (50)–(51) is due to the third relevant property  $P_3$ , which has to do with the relation taking place between the denoted event and its Theme. More precisely, the hypothesis is that for *-age* to be acceptable, a (loose) incremental relation has to be conceivable between the event  $e$  and the Theme  $x$ : for every (relevant) proper part  $y$  of the Theme  $x$ ,  $y$  stands in the relation  $\theta$  denoted by the verb to some proper part  $e'$  of  $e$  (cf. the property (46) of Krifka 1998, called *mapping to subevents*). This relation can easily be satisfied in (50) (every (relevant) part of the skirt can be the Theme of a pleating subevent), but not in (51) (it does not make sense to say that every (relevant) part of the eyes is the Theme of a squinting subevent).<sup>10</sup>

<sup>10</sup> The relation we need is looser than the Krifkean one (cf. Krifka 1998) because it allows the same part  $y$  of the Theme  $x$  to be the Theme of different subevents  $e'$ ,  $e''$ ...of  $e$ . For instance, VPs like *iron the skirt* satisfy our incremental relation, even if for some parts  $e'$  and  $e''$  of the whole ironing  $e$ ,  $e'$  and  $e''$  can have the same subpart of the skirt as a Theme (e.g., the same part of the

Note that  $P_3$  is neutralised with Themeless verbs like unergative ones, since these cannot be concerned by the Theme-event relation.

$P_3$  also accounts for the contrast between (53) (perfectly normal) and (54) (which is very scabrous, even when the intention to injure is taken for granted):

- (52) Pierre a écrasé la banane/ le piéton  
Pierre crushed the banana/ ran over the pedestrian
- (53) L'écras**age** de la banane  
The crushing of the banana
- (54) #L'écras**age** du piéton  
The running over of the pedestrian
- (55) OK L'écras**ement** du piéton  
The running over of the pedestrian

If (54) is scabrous, it is because in order to fulfill  $P_3$ , the interpreter has to evoke a scene where to different parts of the subject's action corresponds different parts of the pedestrian, ending up with a bloody scenario.

$P_3$  also accounts for the fact that sometimes, *-age* EDNs are better with a plural Theme. Indeed, a Theme made of a plurality of entities is an alternative way to satisfy the incremental relation when it cannot be fulfilled with one entity only:<sup>11</sup>

- (56) Le °tu**age** des mouches  
The kill-age of the flies
- (57) #Le °tu**age** de la mouche  
The kill-age of the fly
- (58) L'arriv**age** des légumes/#d'un légume  
The arriv-age of the vegetables/of one vegetable
- (59) OK L'arriv**ée** d'un légume  
The arrival of one vegetable

#### 4.2.4 Property $P_4$ : ontological domains

The last property driving the competition between *-ment* and *-age* concerns the ontological domain to which pertains the denoted eventive chain. The proposed

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skirt can be ironed twice). In other words, we admit here that an incremental relation takes place between the event and the Theme even if the property (47) of Krifka 1998 (*uniqueness of events*) is not satisfied.

<sup>11</sup> There are some exceptions to this picture though. For instance, *poussage* used to denote a shipping technique does not seem to require a plural Theme to be acceptable. I do not have an explanation for this.



hypothesis is that *-age* is marked for a specific domain, namely the physical one, while *-ment* is ontologically unmarked.

A first prediction of this hypothesis is that *-age* will not be selected by verbs which do not have a physical reading. This is the case of a subset of psych-verbs, like *penser* 'think', *préoccuper* 'preoccupy', *effrayer* 'to frighten', or *imaginer* 'imagine'. And indeed, the *-age* EDNs of these verbs appear odd to native speakers (cf. ??*pensage*, ??*préoccupage*, ??*effrayage*, ??*imaginage*). However, one finds from time to time occurrences of them, but they seem to involve a metaphor: the psychological interaction is depicted as a physical one. For instance, *effrayage* is slightly present in corpora, but it denotes the (physical) event by which one triggers fear on the Experiencer (and, as expected given  $P_2$ , this causing event is conceived as an intentional action).

Another prediction of the hypothesis is that when the base is underspecified wrt to the ontological domain of the denoted event (like *gonfler* 'inflate', which can denote a physical event or an abstract one depending on the nature of the Theme), *-age* will select the physical reading, and *-ment* the other ones. This is indeed the case, cf. (60). And again, when an abstract event is denoted with the help of an *-age* EDNs as in (61), a metaphor seems to be involved in the interpretation:

- (60) Le gonflement des prix / le gonflage du ballon  
The inflating of the prices [abstract Theme]/ the inflating of the balloon  
[physical Theme]
- (61) Le gonflage des prix (metaphorical)  
The inflating of the prices

$P_4$  is less coercitive than properties  $P_1$ - $P_3$ , since it often seems possible to accommodate it with a metaphorical reading.

## 5. *-ment* versus *-ion*

This section is dedicated to the differences between the suffixes *-ment* and *-ion*. The competition between these two suffixes represents a much more difficult area than the previous one, maybe because *-ion* and *-ment* are supposed to be quite unproductive in modern French -- although not totally, while *-age* is very productive, cf. Heinold (2007)<sup>12</sup>. Indeed, the relative difficulty to create

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<sup>12</sup> For instance, in a corpus of the newspaper *Le Monde* extending on several years, Heinold found 65 neologisms in *-age*, 10 in *-ment* and 20 in *-ion*. It should be noted, however, that in less formal corpora, one finds quite often neologisms in *-ment* and *-ion*. Of course, these productions can be analysed as results of lexical incompetence. But then, as already said in the introduction, the question remains of why some neologisms *never* show up in any corpora.

neologisms in *-ion* and *-ment* obliges to play with verbs who actually have the two nominalisations.

Dubois 1962 assumes that *-ment* and *-ion* are synonymous and come from the same syntactical structures. He only notes that two competing nominalisations select different readings of the same verb, the *-ion* ones being “more technical or more recent” (*id.*, p.28). In what follows, I will show that there are more systematical differences between *-ion* and *-ment* than suggested in previous literature.

### 5.1 Property $P_1$ : length of the eventive chain

Roughly, as far as  $P_1$  is concerned, there seem to exist some similarities between *-age* and *-tion* in the way they compete with *-ment*.<sup>13</sup>

Firstly, with bases of causative/inchoative verbs, *-ion* EDNs tend to be underspecified: they can target either the 'longer' or the 'shorter' reading (while, as we saw before, *-ment* selects the shorter one). More precisely, *-ion* can either denote the whole causation, or the change of state only, while *-ment* denotes the change of state, but not the whole causation.<sup>14</sup> This is illustrated here:

- (62) L'iso**lement** de la maison  
The house's isolation  
i. the isolated (change of) state of the house  
ii. #the action of isolating the house
- (63) L'isolati**on** de la maison  
The house's isolation  
i. the isolated (change of) state of the house  
ii. the action of isolating the house
- (64) Le dénatura**ment** de la presse  
The denaturation of the press  
i. the press alters by itself  
ii. #an external event triggers the alteration<sup>15</sup>

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<sup>13</sup> I should add that some of the native speakers I consulted do not have intuitions about the distinctions made in this sub-section, which seems to suggest, as Dubois (*id.*) proposes, that *-ion* and *-ment* tend to be used as synonyms in modern French. However, some other speakers *do* recognise them, and we will see that they also receive some diachronical and syntactical support.

<sup>14</sup> It is interesting to see that this hypothesis is confirmed by some dictionaries, but not all. For instance, *Le Littré* defines *dénivellement* (*deleveling*) as the result of the process denoted by *dénivellation* (*deleveling*). But *Le Trésor de la Langue française* defines *dénivellement* as denoting an action.

<sup>15</sup> Of course, this reading is acceptable for (64) as soon as a *par*-phrase is added (cf. the discussion above about (27)-(28)). But the point here is that it is not available in absence of such a PP.

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- (65) La **dénaturation** de la presse  
The denaturation of the press  
i. the press alters by itself  
ii. an external event triggers the alteration

With some alternating bases, *-ion* EDNs only access the long reading. This confirms that *-ion* is more 'causation' oriented while *-ment* is more 'result'-oriented. For instance, *finition* 'finishing' cannot denote the change of state only, and must denote an event triggering it upstream. This explains the unacceptability in (67b), since the ending of the autumn cannot be caused by an event of which it would be the Theme.

- (66) Le **finissement** de l'automne  
The ending of the autumn.
- (67) a. La **finition** du poème  
The finishing of the poem  
b. #la **finition** de l'automne  
The finishing of the autumn
- (68) La voiture s'est déportée sur la gauche. (inchoative reading)  
The car swerved to the left
- (69) Le **déportement**/#la **déportation** de la voiture  
The swerving of the car
- (70) Les Nazis ont déporté des millions de Juifs. (causative reading)  
Nazis sent millions of Jews in concentration camps
- (71) Le #**déportement**/la **déportation** des Juifs  
The deportation of the Jews

As with causative/inchoative bases, *-ment* EDNs tend to denote the change of state only, it is harder to adjunct them a *par*-object than with *-ion* EDNs:

- (72) L'**oppression**/l'**excitation** des enfants par Paul  
The oppression/excitation of the children by Paul
- (73) L'**oppressionnement**/l'**excitement** des enfants #par Paul  
The oppressionment/excitement of the children by Paul

Causative bases without inchoative readings (ie, obliged to denote the entire causation on all their uses) also confirm that *-ion* denotes longer eventive chains than *-ment*. Indeed, such bases have more difficulty to combine with *-ment* than with *-ion*. On the other hand, *-ment* neologisms are not rare with causative verbal bases having an inchoative reading (if the *-ment* noun does not already exist in the lexicon). This can be illustrated through a difference between two types of causative psych-verbs, namely *indigner*-verbs (which have an inchoative reading, cf. (75)–(76) below), and *séduire*-ones (which do not exhibit the inchoative reading, cf. (77)–(78)). With *séduire*-verbs, the pronoun *se* is always interpreted

as a reflexive pronoun (while the interpretation of *se* with the inchoative reading is of course not reflexive):

- (75) a. Paul s'est indigné.  
 i. Paul got indignant (inchoative reading)<sup>16</sup>  
 ii. Paul did something which made him indignant (causative reading)  
 b. **Indignation** (listed in dictionaries), °**indignement** (184 occ. in corpora)
- (76) a. Paul s'est irrité de ma réponse. (inchoat. r.)/ Paul s'est irrité lui-même. (causative r.)  
 Paul got angry about my answer / Paul irritated himself  
 b. **Irritation** (listed in dictionaries), °**irritement** (133 occ. in corpora)
- (77) a. Paul s'est séduit.  
 i. Paul seduced himself (causative reading)  
 ii. no inchoative reading  
 b. **Séduction**, \***séduisement** (0 occ. in corpora)<sup>17</sup>
- (78) a. Paul s'est humilié.  
 i. Paul humiliated himself (causative reading)  
 ii. no inchoative reading  
 b. **Humiliation**, \***humiliement** (2 occ. in corpora)<sup>18</sup>

Note that the Latin suffix *-tio* was already more 'causative' than the Latin suffix *-men(tum)*. The following pairs taken from Gaffiot (1934) shows that *-io* nominalisations tend to denote the causation or the result of it, while *-men(tum)* corresponding ones denote either the result of the action or one of its reifications:<sup>19</sup>

- (79) a. *motio, -onis*: action of moving, movement, impulsion  
 b. *momentum (movimentum)*: movement, impulsion
- (80) a. *fractio, -onis*: action of breaking  
 b. *fragmen*: fragment, broken pieces
- (81) a. *argutio, -onis*: action of blaming  
 b. *argumentum*: argument, evidence

<sup>16</sup> Under this reading, the verb often takes a *de*-object indicating the Theme of the denoted emotion (*Il s'est indigné de son arrivée*, 'He got indignant about his arrival'), cf. also the inchoative reading in (76a). This *de*-object is not acceptable with *séduire*-verbs in presence of the pronoun *se*.

<sup>17</sup> In fact, I found one occurrence of it, but it was clearly a typo for the present participle *séduisant*.

<sup>18</sup> In one case, *humiliement* is irrelevantly used as an adverb. The second occurrence is from the dictionary *Le Littré*, who notes that *humiliement* existed in the past.

<sup>19</sup> Note that some precaution is in order with this kind of etymological arguments, since, as underlined by Merk (1970), the correspondence between French and Latin suffixes is far from perfect. For instance, *-tio* nouns have given *-ion* but also *-ance* and *-ment* nouns.

As for intransitive verbs denoting a single event or an iteration of it,  $P_1$  does not seem to play any role in the competition between *-ment* and *-ion*. Sometimes, *-ion* seems to target either the short or the long reading, while *-ment* selects only the short one (for instance, it is more natural to conceive a *suffocation* as an iteration of *suffoquements* than the reverse). But this does not seem to be a general tendency, and it does not clearly reflect in the plural/singular morphology. Besides,  $P_1$  does not make any prediction about intransitive verbs which do not have an iterative and a non-iterative reading, nor about causative verbs who systematically denote the whole causation (ie without an inchoative reading) and for which the nominalisation in *-ment* and in *-ion* are both available in the lexicon. Indeed, as with such verbs, any nominalisation denotes the whole causation, one cannot say anymore that *-ion* ones only target the long reading.

## 5.2 Property $P_4$ : ontological domains

However, other features allow to differentiate the two suffixes with all these classes of verbs. Very often, when comparing semantically their *-ment* EDN and the corresponding *-ion* one, one finds that the latter one roughly corresponds to the first one, but augmented with adjuncts specifying further some properties of the process:

- (82) a. **agenouillement**: action of kneeling or its result (*TLF*)
- b. **généflexion**: action of kneeling *in sign of respect or submission* (*id.*)
- (83) a. **crucifiement**: action of crucifying<sup>20</sup> (*Le Petit Robert*)
- b. **crucifixion**: “*crucifiement de Jésus-Christ*” (*id.*), ie “*crucifixion of Jesus-Christ*”

The same way, a '**renonciation**' could be defined as a '**renoncement**' *made public* (which explains why one can sign a *renonciation*, but not a *renoncement*, or why *déclaration de renonciation* is fine, while *déclaration de renoncement* is strange).

Very often, the specification carried out by *-ion* triggers a change in the ontological domain to which pertains the denoted event: while an *agenouillement* can be a simple physical event, *généflexion* compulsorily denotes a social, ethical event. Of course, the target domain can vary from nouns to nouns, but in many cases, *-ion* transfers the event denoted by the corresponding *-ment* noun in an abstract domain.

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<sup>20</sup> Note that *crucifier* 'crucify' does not endure that causative/inchoative alternation. In that case, *-ment* EDNs do not denote the change of state only, since the verbal base is not underspecified in the relevant way.

Note that there is a common point behind the properties  $P_1$  and  $P_4$  in the way they differentiate the two suffixes, namely that in both cases, *-ion* has a richer, more complex meaning than the corresponding *-ment* one.

### 5.3 $P_5$ : discontinuity

Another intuition about the difference between *-ment* and *-ion* is that *-ion* is more 'prototypically telic' than *-ment*. Firstly, note in table 1 above that even if *-ment* take bases of verbs having a telic reading, it is less often the case than *-ion* (46% versus 57%). Secondly, the bases selected by *-ion* resemble more the prototypical *eat a sandwich* VPs than the ones selected by *-ment*. Indeed, with verbs denoting an event  $e_1$  and a change of state  $e_2$ , *-ion* EDNs seem to require that the event  $e_1$  can be conceived as performed in several discontinuous steps  $e_1'$ ,  $e_1''$ ,  $e_1'''$ ... (subevent/subresult, pause, subevent/subresult, pause...). I will assume that the verb satisfies this requirement when it can be modified by *en plusieurs étapes* 'in several steps'. On the contrary, *-ment* seems to preferably select bases denoting an event conceived by default as taking place "in one shot". This difference is illustrated below:

- (84) a. J'ai éclaté le ballon #en plusieurs étapes.  
I exploded the balloon in several steps  
b. éclatement/\*éclatation
- (85) a. Samira a alphabétisé Pierre en plusieurs étapes.  
Samira alphabetised Pierre in several steps  
b. alphabétisation/\*alphabétisement
- (86) a. Il m'a étonné/affolé #en plusieurs étapes.  
He astonished/threw me into panic in several steps  
b. étonnement, affolement/\*étonnation, \*affolation
- (87) a. Il m'a séduit/humilié en plusieurs étapes.  
He seduced/humiliated me in several steps  
b. séduction, humiliation/\*séduisement, \*humiliement

There are counter-examples to this correlation (for instance, *gonfler* is acceptable with *en plusieurs étapes* but cannot nominalise in *-ion*), but until now, I found more nouns confirming it than the reverse. Dumay & Martin (2008) try to test it through experiments on pseudo-verbs.

## 6. *-age* versus *-ion*

Several predictions about the differences between *-age* and *-ion* derive from what has been proposed in the sections 4 and 5. Firstly, we expect *-age* and *-ion* to preferably denote events from different ontological domains when attached to the same bases. This is confirmed by the following data:

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- (88) a. un cass**age** de doigt, #une cassat**ion** de doigt (physical event)  
a breaking of a finger
- b. la cassat**ion** d'une décision juridique, #le cass**age** d'une décision juridique (jur. event)  
the canceling of a juridical decision
- (89) a. le fix**age** d'un tableau (non metaphorical)  
The fastening of a painting
- b. le fix**age** des prix (metaphorical) vs la fixat**ion** des prix (non metaphorical)  
The setting of the prices

Note however that *-ion* can sporadically denote physical events too. For instance, *fixation* would be acceptable in (89a) without involving any metaphor (whereas it is not possible in (88a)). But this does not undermine the claim that *-age* and *-ion* differ in their preference for specific domains.

Another expected difference is that contrary to *-age* which always implies the presence of an action (cf.  $P_2$ ), making it difficult to use to denote pure change of state (ie not caused by the action of an entity upstream), *-ion* can denote such pure changes of state. Take again the verb *fixer* when it translate the intransitive *settle* (as said above, this inchoative reading often requires the use of the pronoun *se*)

- (90) a. La tribu s'est fixée dans cette région.  
The tribe settled in this region
- b. La fixat**ion** de la tribu/#le fix**age** de la tribu  
The settling of the tribe

On this use of *fixer*, *-age* cannot be used, except if the speaker wants to signal the existence of an action upstream of which the settling is the result.<sup>21</sup> *Dessaler* also only nominalises in *-ion* in its inchoative reading (examples taken from Dubois 1972, p.28):<sup>22</sup>

- (91) a. On dessale l'eau de mer.                      Le dessalage de l'eau de mer  
We remove the salt from seawater    The removing of the salt from seawater

<sup>21</sup> Note that because of the incrementality constraint imposed by *-age* (cf.  $P_3$ ), (90b) in the *-age* version would also require in this agentive context that the Agent acted on different parts of the tribe to get it settled in the region.

<sup>22</sup> Dubois only states that *-age* and *-ion* select different readings of the verb. For the same syntactical frame, the only difference he seems to make between *-age* and *-ion* is that *-ion* selects the more technical reading of the verb. This criteria does not apply to (91), where the two meanings are equally technical.

- b. L'équipage du canoé a dessalé. La dessal**aison**<sup>23</sup>/#le dessal**age** de l'équipage  
 The crew of the canoe capsized The capsizing of the crew

The same way, (92), but not (93), automatically suggests the existence of an action upstream triggering the Theme's change of state (which makes e.g. the *earth* version of (92b) odd, except if we admit that the Earth's glaciation was triggered by a divine action).

- (92) a. Le dispers**age** des cendres (no 'by themselves' reading)  
 The dispersion of the ashes  
 b. Le glaç**age** du gâteau/ #le glaç**age** de la terre  
 The glazing of the cake/the glaciation of the Earth (intended reading)  
 c. Le perfor**age** du mur/#le perfor**age** de l'intestin  
 The perforation of the wall/the perforation of the intestine.  
 (93) a. La dispers**ion** des cendres ('by themselves' reading OK)  
 The dispersion of the ashes  
 b. La glaciat**ion** de la terre ('by itself' reading OK)  
 The glaciation of the Earth  
 c. La perforat**ion** de l'intestin ('by itself' reading OK)  
 The perforation of the intestin

Another related prediction from previous claims is that with underspecified causative/inchoative verbal bases, the *-age* EDNs systematically denote the whole causation, while *-ion* ones can also denote the change of state only. (92) and (93) can be seen as evidence for this claim too. But it also accounts for the following contrast in (95)–(98), once we assume that the object of *aboutir à* 'result in' can denote the last part of the eventive chain described by the subject.<sup>24</sup>

- (95) Le °dispers**age** des cendres a abouti à leur dispers**ion**.  
 The 'dispers-age' of the ashes resulted in their dispersion  
 (96) #La dispers**ion** des cendres a abouti à leur °dispers**age**.  
 The dispersion of the ashes resulted in their 'dispers-age'  
 (97) Le °désinfect**age** de la plaie a abouti à sa désinfect**ion**.  
 The 'disinfect-age' of the wound resulted in its disinfection  
 (98) #La désinfect**ion** de la plaie a abouti à son °désinfect**age**.  
 The 'disinfect-age' of the wound resulted in its disinfection

<sup>23</sup> Some verbs like *dessaler* nominalise in *-aison* and not in *-(at)ion*, but this suffix *-aison* is the same as the *-ion* one under study here.

<sup>24</sup> This is for instance corroborated by the acceptability of a sentence like *La vente d'un objet aboutit au transfert de sa propriété* 'the selling of an object results in the transfer of its property' (since the property transfer corresponds to the last part of the eventive chain denoted by *the selling*).



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As expected, (96) and (98) are inappropriate because *-age* necessarily denotes the whole causation. This forces to end up either with an interpretation where a whole causation *C* results in itself (if the *-ion* EDN denotes the whole causation *C* too), or with an interpretation where the result of a causation *C* results in the causation *C* (if the *-ion* EDN denotes the result only).

A last prediction is that *-ion* will be *ceteris paribus* preferred to *-age* when the incremental relation between the event and the Theme imposed by *-age* cannot be satisfied (cf. *P*<sub>3</sub>). This is supported by the following contrasts:

- (99) Le codifi**age** d'un texte/?d'un nombre  
The codifying of a text/of a number
- (100) La codificati**on** d'un texte/d'un nombre  
The codification of a text/a number
- (101) Le numérot**age** d'une rue/?d'une voiture  
The numbering of a street/of a car
- (102) La numérotati**on** d'une rue/d'une voiture  
The numbering of a street/ of a car
- (103) Le modifi**age** d'une image/?d'un chiffre  
The modifying of an image/ of a figure
- (104) La modifi**cation** d'une image/d'un chiffre  
The modification of an image/ of a figure

## 7. Conclusions

Table 2 below summarises the differences made in sections 4-6 between the three suffixes under study on their eventive reading.

	<i>-age</i>	<i>-ment</i>	<i>-ion</i>
<i>P</i> <sub>1</sub>	long reading with underspecified verbal bases	short reading with underspecified verbal bases	long or short readings with underspecified verbal bases
<i>P</i> <sub>2</sub>	[+AGENTIVE]	[±AGENTIVE]	[±AGENTIVE]
<i>P</i> <sub>3</sub>	incrementality between event and Theme	unmarked	unmarked
<i>P</i> <sub>4</sub>	physical domain	all domains	preference for the abstract domain
<i>P</i> <sub>5</sub>		[-DISCONTINUITY]	[+DISCONTINUITY]

Table 2: semantical/aspectual differences between the three eventive suffixes under study

In sum, I hope to have made clear that these three suffixes are semantically rich and seem to function as aspectual markers similar to verbal ones. However, contrary to verbal markers, nominalising suffixes often give rise to specific lexicalisations and are not equally productive. Hence, the competition between them is harder to modelise, and diachronical factors arguably play a bigger role than suggested here. But clearly, the choice of the suffix in the nominalising process does not only depend on historical accidents, as it is traditionally often assumed.

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