

# Niches in derivational morphology: Specialisation of suffixes within the formation of Portuguese deverbal nouns<sup>1</sup>

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## ABSTRACT

The aim of this paper is to study the specialisation of affixes following the same word-formation schema. The derivational morphology of Portuguese presents a multiplicity of suffixes that create deverbal nouns with the general meaning of ‘event’/‘result’/‘state’ (Rodrigues 2008). These suffixes may be exemplified by *-ção* (*avaliação* ‘evaluation’), *-ment(o)* (*congelamento* ‘freeze’), *-dur(a)* (*cozedura* ‘event of cooking’), *-agem* (*aterragem* ‘landing’), *-nç(a)* (*cobrança* ‘levy’), *-ão* (*empurrão* ‘push’), *-nç(o)* (*falhanço* ‘failure’), *-id(o)* (*ladrido* ‘barking’), *-ic(e)* (*coscuvilhice* ‘gossip’), etc.

Apparently, these suffixes are rivals, because they all generate the same kind of products from the same kind of bases. According to the Darwinian perspective presented by Lindsay & Aronoff (2013), Aronoff & Lindsay (2014, 2015) and Aronoff (2016), two affixes that are in mutual competition could either lead to the annihilation of one of them, or to their survival in the language, on the condition that they find a niche, i.e., a specialisation.

In this paper, we will bring evidence to the specialisation of the suffixes *-id(o)*, *-ment(o)* and *-dur(a)*, among the suffixes that operate the construction of event/result/state deverbal nouns.

KEY-WORDS: Derivational paradigms; specialisations of affixes; deverbal nouns.

## 1. Introduction

The formation of event/result/state deverbal nouns has been the focus of debate from different perspectives. In this work, it is followed a lexicalist perspective, in the tradition of Aronoff (1976) and Corbin

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(1989). Corbin contends that each suffix working on each of the Word Formation Paradigms has a role on its own. This is contrary to Beard (1995), for instance, who considers that affixes are simple phonological spell-outs of rules. The analysis conducted in Rodrigues (2008) of 8414 deverbal nouns and the present study consolidate the perspective of Corbin.

In this work we also follow a paradigmatic approach to derivational morphology (Štekauer 2014; Antoniová & Štekauer 2015; Blevins, Ackerman & Malouf 2019; Blevins 2016; Rodrigues 2016b; Rodrigues & Rodrigues 2018), according to which paradigms are mental patterns dynamically organised according to different kinds of structural features that build the relationships between words. As we will show, selectional restrictions and semantic specialisations are among those features that are responsible for the construction and the cohesion of the patterns that form the paradigms.

Štekauer (2014: 361-363) explains that derivational paradigms hold a static and a dynamic aspect. The static aspect consists in the “system of relationships covering both actual and potential words”. The dynamic aspect is understood “as a device for the formulation of new complex words”. This implies that the system of relationships built by the speaker’s mind serves as an architecture of derivational guidelines for the construction of new words. It is important to emphasise that the so-called static system is not mentally idle. When the paradigm is no longer available for the formation of new words, it still functions as a mental architecture, keeping the system of relationships between the involved words cohesive.

Thus, in our work, we analyse patterns constituted by pairs of verbs and suffixed event nouns, disregarding their dynamic or static aspect. Consequently, although we will mention diachronic data and lexemes belonging to a specific knowledge domain, this study is neither meant to be diachronic nor dialectal nor sociolectal in nature. Although being aware of heterogeneous lexicons dependent on the several variation factors of language (Rodrigues 2015), that scope goes beyond this paper. The study focuses on contemporary synchronic patterns (either dynamic or static) which result from different relationships between words. Those

relations may be structured upon wide formal and semantic features or features belonging to finer tiers of phonologic, syntactic, semantic structures and interface modules (Jackendoff 2002), forming, respectively, macro-patterns and micro-patterns, as we will explain bellow.

The analysis of a corpus constituted by 8414 deverbial nouns and a total of 13708 meanings of those nouns was carried out by Rodrigues (2008). The corpus was constructed up on the *Dicionário da Língua Portuguesa* by Costa & Melo (1996), the *Vocabulário Portuguez e Latino* by Raphael Bluteau (1712-1728) and the *Grande Diccionario Portuguez ou Thesouro da Lingoa Portugueza* (1871-1874) by Domingos Vieira. Other sources, such as the Academia das Ciências de Lisboa *Dicionário da Língua Portuguesa Contemporânea* (2001) and the *Dicionário Houaiss da Língua Portuguesa* (2001-2002), were used to check semantic structures of the derivatives. Some of the derivatives were also collected from oral and written real usages, which are identified in Rodrigues (2008).

The constitution of the corpus of 8414 deverbial nouns followed a rigorous protocol to filter the derivatives (Rodrigues 2008: 121-144). According to the protocol, only nouns correlated with a potential or a real verb forming a mental derivational (formal and semantic) pattern were considered.

The Portuguese suffixes that form event deverbial nouns are *-ção* (*avaliação* 'evaluation', *representação* 'representation', *vampirização* 'vampirisation'), *-ment(o)* (*congelamento* 'freeze', *descolamento* 'detachment', *adormecimento* 'falling asleep'), *-dur(a)* (*raladura* 'event of grating', *cozedura* 'cooking', *serradura* 'sawing, sawing dust'), *-agem* (*aterragem* 'landing', *alunagem* 'landing on the moon', *amaragem* 'landing on water'), *-nça(a)* (*cobrança* 'levy', *vingança* 'revenge', *mudança* 'change'), *-ão* (*empurrão* 'push', *encontrão* 'collision', *puxão* 'wrench'), *-nço(o)* (*falhanço* 'failure', *gamanço* 'snitching', *rasganço* 'tearing'), *-id(o)* (*ladrido* 'barking', *rosnido* 'growl', *gemido* 'moan'), *-ic(e)* (*coscuvilhice* 'gossip', *pedinchice* 'begging', *aldrabice* 'tinkering'), *-ari(a)* (*gritaria* 'much screaming', *zurraria* 'much braying', *berraria* 'much screaming'), *-d(a)* (*olhada* 'glance', *chamada* 'call', *caminhada* 'walk'), *-nci(a)* (*presidência* 'presidency', *luminescência* 'luminescence', *radiância* 'radiance'), *-del(a)* (*molhadela* 'soaking', *varredela* 'sweeping', *olhadela* 'glance'),

-ç(o) (*cansaço* 'tiredness', *sumiço* 'vanishing', *cagaço* 'fear') and *-ism(o)* (*bisbilhotismo* 'attitude of prying', *facilitismo* 'attitude of facilitating', *conformismo* 'conformism').

All of the suffixes provide derivatives with a general meaning of 'event' / 'result' / 'state'. A Darwinian perspective (Lindsay & Aronoff 2013, Aronoff & Lindsay 2014, 2015 and Aronoff 2016) predicts that the structure does not allow for so many suffixes, since they play redundant roles. In a dynamic structure, this situation should lead to the disappearance of the redundant suffixes. However, the prevalent availability of the suffixes to form new words (dynamic aspect of the paradigm), and not only of the words themselves, reveals that the Portuguese structure needs them. Another sign that Portuguese needs them is that their derivatives constitute, with base words, different patterns, contributing to the cohesion of the system (static aspect of the paradigm).

In this paper, we will focus on the differences between the suffixes *-dur(a)*, *-ment(o)* and *-id(o)*, specifically with respect to their selectional restrictions and the meanings of 'event', 'state' and 'concrete result' of the respective deverbal nouns.

Except for the suffix *-id(o)*, the selectional restrictions and the meanings focused in the present work were collected from the analysis and systematisation of both aspects made in Rodrigues (2008) and they were corroborated by the analysis of those nouns and their respective meanings in corpora (*Corpus do Português*, *Corpus de Referência do Português Contemporâneo*, *Corpus Informatizado do Português Medieval*). The derivatives of the suffix *-id(o)* did not constitute the corpus built by Rodrigues (2008). They are the object of analysis of the present work. For the delimitation of the derivatives with the suffix *-id(o)*, we applied the protocol defined in Rodrigues (2008). One of the rules of the protocol establishes that there must be a mental derivational pattern built by the noun and the correlated verb and that the pattern is built upon the formal and the semantic relationships between both words. Consequently, we did neither consider words ending in *-ido* that are past participles of verbs (e.g. *falido* 'bankrupted'; *dormido* 'slept') nor 'individual' nouns resulting from the conversion of past participles lacking an event meaning (e.g. *comprimido* 'pill'; 'compressed', *desfavorecido* 'disadvantaged individual').

The suffix *-id(o)* is segmented as *-id(o)* and is not considered to be the same as *-d(o)*, having in mind the existence of derivatives such as *ronquido* ‘snore’ and *rosnido* ‘snarl’, derivationally correlated with the verbs *roncar* ‘to snore’ and *rosnar* ‘to snarl’, respectively. Those verbs belong to the first conjugation, which enables them to display past participles ending in *-ado* (*roncado*; *rosnado*) and not in *-ido*. For this reason, we identify the suffix *-id(o)* as an operator in event deverbal nouns formation.

Following those guidelines, we have identified a total of 31 event deverbal nouns formed by the suffix *-id(o)*, which, along with their meanings, were corroborated in the corpora.

Although the three suffixes produce event / result / state nouns (in some cases, from the same verbal base), the meanings of the ‘concrete result’ of products with *-dur(a)* are highlighted because many of them designate ‘wounds’, ‘portions’ and ‘residues’ (*maçadura* ‘bruise’, *envergadura* ‘wingspan’, *serradura* ‘sawdust’), whereas nouns with the suffix *-id(o)* indicate sounds (*rosnido* ‘snarl’, *ronquido* ‘snore’). These properties result from the specialisations of each of the suffixes that do not characterise the other suffixes.

Apart from the differences in meaning, the niches of the suffixes are also based on their selectional restrictions. As we will quantitatively indicate below, *-id(o)* only operates with unergative verbs of emission of sound; *-dur(a)* shows a preference for verbs of causation with the meaning of ‘to provide with’, which goes back to medieval Portuguese, as can be seen in an analysis of the lexicon of veterinary treatises, such as Giraldo (1318).

We leave here a note on quantitative data appearing in the following sections: when we state that a suffix does not operate with a specific kind of bases or that it does not sustain a specific meaning, it is because we have found those occurrences neither in the dictionaries used by Rodrigues (2008) nor in the corpora.

The analysis of the niches or specialisations of suffixes within the same word formation schema is consistent with the idea that word formation is a dynamic domain which is dependent on patterns that speakers deduce from language usage. A word-formation schema may be seen as a macro-pattern, in which the relation between the category of the base, the category of the product and the meaning of the latter builds the pattern. In this sense, event

/ result / state deverbals correspond to a macro-pattern. Within those macro-patterns, micro-patterns may be observed. Those micro-patterns correspond to the niches of each suffix operating within the same macro-pattern. Micro-patterns are built according to selectional restrictions, among other factors, that regulate the adjunction of affixes to bases and according to the possible general and secondary meanings of the products of each of the suffixes. For instance, the specialisation of the suffix *-id(o)* regarding both the meaning of 'sound' and its selectional restrictions constitutes a micro-pattern within the macro-pattern of event / result / state deverbals.

Specialisations of each suffix operating in the same macro-pattern explain why there are deverbals from the same verb with different suffixes (e.g., *encabrestadura* 'wound resulting from the halter', *encabrestamento* 'event of putting the halter on the horse').

## 2. Why do they coexist?

One possible explanation for the coexistence of so many suffixes operating within the same word formation schema resides in psycholinguistic approaches, specifically in the principle of maximisation of opportunity (Libben 2014). According to Libben (2014: 23), "It is through language that we read each other's minds". Thus, there must be an activation of mental states in the hearer that are compatible with the ones in the speaker's mind. To enable this, according to Libben (2014: 23), "the language system must employ every opportunity for reconstruction at the other end. This would include redundancy, the capacity for error repair, the capacity for reconstruction on the basis of partial evidence, and the possibility for heuristic strategies that can compensate for the paucity of bottom-up information".

The principle of maximisation of opportunity refers to every strategy languages provide for equivalence between what is intended by the speaker and what is understood by the hearer. Primarily, this explains why there are languages with redundant morphology. In our perspective, it also explains the coexistence of derivational suffixes bearing similar (not equal) roles. Our idea is that there are subtleties in the meaning of 'event'/'result'/'state' that

need a specialised suffix to be expressed. All the above-mentioned nouns mean 'event'/'result'/'state'; the redundancy of the suffixes consists in this. Notwithstanding, the derivatives of each suffix convey a subtle meaning within the general meaning of 'event'/'result'/'state'.

It is at this point that a Darwinian perspective comes into play, whose proficiency we are analysing here. According to this approach (Lindsay & Aronoff (2013), Aronoff & Lindsay (2014, 2015) and Aronoff (2016)), redundant suffixes are in competition with each other. Unless they each find a niche, that is, a specialisation, redundant suffixes are annihilated, we presume, by the most productive suffix.

We will demonstrate in the next section that the suffixes under focus have found their own niches and what the character of those niches is.

### 3. Are affixes all the same or specialised?

Our aim in this section is to show that suffixes working on the formation of event/result/state nouns are only apparently rivals. This assumption comes from the analysis of the suffixes' specialisations. Those specialisations may result from selectional restrictions and from variances in the general meaning of the event/result/state of the derivatives that convey the mental states of the speaker.

#### 3.1. Selectional restrictions

Selectional restrictions, i.e., structural constraints that restrain the compatibility between affixes and bases (cf. Rainer 2005, Rodrigues 2014, Rodrigues 2015, chap. 6), constitute one type of suffix specialisation.

##### 3.1.1 Selectional restrictions of the suffix *-id(o)*

The formation of deverbal nouns by means of the suffix *-id(o)* is one of the most specialised cases within the domain of word formation. The suffix works with verbs belonging to the three conjugations in Portuguese (*rosnar* 'to growl' / *rosnido* 'growl', *gemitir* 'to groan' / *gemido* 'groan', *ganir* 'to yelp' / *ganido* 'yelp'). In terms of syntactic-semantic constraints, the 100% of the 31 event derivatives have as bases unergative verbs of emission of sound. Those sounds may be made by animals (*ladrar* 'to bark' / *ladrido* 'bark', *mugir* 'to moo' / *mugido* 'moo', *balar* 'to bleat' / *balido* 'bleat', *grasnar* 'to

quack' / *grasnido* 'quack') or by inanimate causes (*tinir* 'to ring' / *tinido* 'ring', *estalar* 'to crackle' / *estalido* 'crackle', *ranger* 'to creak' / *rangido* 'creak'). They may also be made by human beings, but only if they are vegetative sounds (*roncar* 'to snore' / *ronquido* 'snore', *tossir* 'to cough' / *tossido* 'cough', *gemer* 'to groan' / *gemido* 'groan').

Verbs whose meaning involve the production of sound, but which are not unergative ones, do not behave as bases for suffixation by means of *-id(o)*. Transitive verbs with an agent are also absent from those bases: *assobiar* 'to whistle' / \**assobiido*; *cantarolar* 'to hum' / \**cantarolido*; *barafustar* 'to rant' / \**barafustido*; *trautear* 'to hum' / \**trauteido*.

### 3.1.2 Selectional restrictions of the suffix *-dur(a)*

The suffix *-dur(a)* is not as restrictive as the suffix *-id(o)*, but it also presents some constraints in relation to the bases it may operate with. It does not occur with psych verbs nor with verbs with the stimulus as subject (*contentar* 'to please' / \**contentadura*; *amedrontar* 'to frighten' / \**amedrontadura*), nor with the experiencer as subject (*ansiar* 'to yearn' / \**ansiadura*; *padecer* 'to suffer' / \**padecedura*; *sofrer* 'to suffer' / \**sofredura*). Psych verbs correlate with nouns bearing the suffix *-ment(o)* (*contentamento* 'contentment'; *amedrontamento* 'process of frightening'; *envaidecimento* 'process of becoming conceited'; *ansiamento* 'anxiety'; *padecimento* 'suffering'; *sofrimento* 'suffering').

According to the analysis of a total of 364 event deverbal nouns with the suffix *-dur(a)*, the suffix only operates with bounded event verbs (rejecting, because of this circumstance, verbs containing the suffixes *-ec-* and *-esc-* (cf. *bellow*), and with concrete event verbs (Rodrigues 2008)). This fact yields a specialisation, which is described in the following paragraph.

The suffix *-dur(a)* shows a preference for verbs of causation with the meaning of 'to reduce to fragments or mass substances', 'to reduce', 'to cut' (40,65%), such as *cercear* 'to cramp', 'to reduce', *chanfrar* 'to chamfer', *cortar* 'to cut', *escalavrar* 'to graze', *esgarçar* 'to tear', *podar* 'to prune', *rachar* 'to crack', *rasgar* 'to rip', *raspar* 'to scrape', *respançar* 'to scrape', *roçar* 'to grate', *ralar* 'to grate', *picar* 'to chop up', *moer* 'to grind', *refinar* 'to refine', *segar* 'to reap', *serrar* 'to saw', *rilhar* 'to gnaw', *roer* 'to gnaw'. The remaining categories of verbs display low percentages when compared to those causative verbs.

With regard to morphological constraints, the suffix *-dur(a)* also does not operate with verbs containing the suffixes *-ec-* and *-esc-* nor with circumfixes presenting those elements (e.g., *envelhecer* ‘to get older’/ *\*envelhedura*, *amarelecer* ‘to yellow’/ *\*amareledura*, *amolecer* ‘to soften’/ *\*amolecedura*, *ensurdecer* ‘to deafen’/ *\*ensurdecadura*, *enriquecer* ‘to enrich’/ *\*enriquecedura*). These belong to the specialisation domain of the suffix *-ment(o)* (*envelhecimento*; *amarelecimento*; *amolecimento*; *ensurdecimento*; *enriquecimento*).

The suffix *-dur(a)* does not occur with verbs with the suffixes *-ific-* and *-iz-* (*estupidificar* ‘to stupidify’/ *\*estupidificadura*; *danificar* ‘to damage’/ *\*danificadura*; *especializar* ‘to specialise’/ *\*especializadura*); *amenizar* ‘to smooth’/ *\*amenizadura*), which belong to the domain of the suffix *-ção* (*estupidificação*; *danificação*; *especialização*; *especialização*; *amenização*) (Rodrigues 2008).

### 3.1.3 Selectional restrictions of the suffix *-mento*

The suffix *-ment(o)* is not as restrictive as the suffixes previously analysed. However, this suffix also presents selectional restrictions and compatibilities that highlight its specialisation.

For instance, it is compatible with verbs meaning ‘to provide with’ (10,18%), such as:

*enfarinhar* ‘to flour’, *enfartar* ‘to stuff’, *enfeitar* ‘to decorate’, *enfivelar* ‘to buckle’, *engessar* ‘to plaster’.

The suffix operates with psychverbs (6,89%), with the stimulus as subject and with the experiencer as subject, unlike the suffix *-dur(a)* (cf. examples above.).

In what concerns morphological specialisations, the suffix *-ment(o)* operates with verbs presenting the suffixes *-ec-* and *-esc-* and with circumfixes containing those segments (4,67%) (cf. examples above). The suffix rejects verbs with the suffixes *-iz-* and *-ific-* (*legalizar* ‘to legalise’/ *\*legalizamento/legalização* ‘legalisation’; *solidarizar* ‘to express solidarity’/ *\*solidarizamento/solidarização* ‘event of expressing solidarity’; *prontificar* ‘to be ready; to volunteer’/ *\*prontificamento/prontificação* ‘event of being ready; event of volunteering’).

## 3.2 Meanings

### 3.2.1 Secondary meanings

#### 3.2.1.1 Concrete result 'wound' vs. state 'disease'

Secondary meanings of the derivatives of *-ment(o)* and *-dur(a)* contrast in a way that evidences the specialisation of each suffix. We will focus on the semantic field of 'diseases/injuries'. Derivatives in the semantic domain of 'diseases/injuries' by means of the suffix *-ment(o)* manifest a meaning of 'disease' (2,52%), as a 'state' (25,35% of the meanings). In contrast, derivatives in the same semantic field by means of the suffix *-dur(a)* convey a meaning of 'wound' (10,81%), as a 'concrete result' (22,49% of the meanings).

Examples of derivatives with the suffix *-dur(a)* meaning 'wound' are:

*matadura* 'wound on a horse's back caused by the saddle', *gretadura* 'scratch', *inchadura* 'swelling', *peladura* 'bald patch', *estorcegadura* 'wound resulting from a pinch', *estortegadura* 'wound resulting from a pinch', *escalavradura* 'graze', *mochadura* 'mutilation', *rascadura* 'scratch', *rasgadura* 'tear', *sarjadura* 'cut', *encabrestadura* 'wound on a horse resulting from the halter', *cravadura* 'wound on a horse resulting from a nail', *descarnadura* 'fleshing', *descascadura* 'wound resulting from peeling', *escamadura* 'wound resulting from peeling', *esfoladura* 'wound resulting from scraping', *escaldadura* 'wound resulting from scalding', *esmagadura* 'wound resulting from crushing', *golpeadura* 'cut', *maçadura* 'bruise', *machucadura* 'bruise, contusion', *picadura* 'sting, bite', *pisadura* 'bruise', *queimadura* 'burn', *trilhadura* 'bruise', *torcedura* 'injury resulting from wrenching', *retorcedura* 'injury resulting from wrenching', *arranhadura* 'scratch', *beliscadura* 'wound resulting from pinching', *estoqueadura* 'wound made with a rapier', *mordedura* 'bite', *roedura* 'wound resulting from friction', *atassalhadura* 'wound resulting from tearing', *alcançadura* 'bruise or gall on the hoofs caused by chafing, i.e., knocking one foot against the fetlock of another leg', and *tomadura* 'injury on the horse's back caused by saddlery', *assentadura* 'the same as *tomadura*'.

Examples of derivatives with the suffix *-ment(o)* meaning 'disease' are:

*adoecimento* 'disease', *agravamento* 'a horse disease that affects its breathing', *aguamento* 'a horse disease', *ardimento* 'disease of the Oolive

tree', *encarquilhamento* 'leaf curl: disease of the peach tree, caused by the fungus *Taphrina deformans*', *engorduramento* 'disease of the wines', *estazamento* 'disease of an animal caused by overworking and fatigue', *estiolamento* 'etiolation: bleaching and altering of the natural development of (a green plant) by excluding sunlight', *gretamento* 'disease of apples and pears', *vaziamento* 'a horse disease causing it to defecate too much', *atroamento* 'a hoof disease', *esquentamento* 'gonorrhoea', *esfriamento* 'cold', *resfriamento* 'cold', *quebramento* 'disease from tiredness', *crestamento* 'sunburn', *derramamento* 'rabies', *amolecimento* 'softening of the tissues'.

Notice the distinction between *gretamento* 'disease of apples and pears' and *gretadura*, both from the verb *gretar* 'to scratch'. The first one means a 'disease' and the second one a 'wound'.

This distinction between the specialised meanings of the suffixes *-ment(o)* and *-dur(a)* goes back to medieval Portuguese, as observable in the analysis of the lexicon of veterinary treatises, such as Giraldo (1318), examined in Rodrigues (2012, 2013, 2016a) and Rodrigues & Sá Morais (2015).

In Giraldo (1318), the meaning 'disease' is found in derivatives with the suffix *-ment(o)* (Table 1) and the meaning 'wound' in derivatives with the suffix *-dur(a)* (Table 2).

Derivatives with the suffix <i>-ment(o)</i> 'disease'
<i>gravamento</i> 'a horse disease that affects its breathing'
<i>carregamento</i> 'the same as <i>gravamento</i> '
<i>augoamento</i> 'disease caused by overworking and fatigue'
<i>dessecamento</i> 'disease that makes the horse getting thinner'
<i>retimento</i> 'strangury'
<i>inchamento</i> 'strangury'
<i>danamento do espinhaço</i> 'disease of the backbone'
<i>derreamento</i> 'disease of the kidneys'

<i>espadoamento</i> 'disease of the scapulae'
<i>eslomedramento</i> 'disease of the hips'
<i>espalmamento das hunhas</i> 'disease by which the hoof separates from the flesh'
<i>sobrepoimento</i> 'disease – cancer – that develops from interfering'
<i>emtapamento</i> 'glanders'

Table 1. Derivatives with the suffix *-ment(o)* in Giraldo (1318)

Derivatives with the suffix <i>-dur(a)</i> 'wound'
<i>encalçaduras</i> 'bruise or gall on the hoofs caused by chafing'
<i>encrauaduras</i> 'wound caused by the nails'
<i>estrepaduras</i> 'wound made by a thorn'
<i>empedradura</i> 'wound made by a stone'

Table 2. Derivatives with the suffix *-dur(a)* in Giraldo (1318)

Rodrigues (2008) proposed that the specialisation of the suffix *-dur(a)* in the meaning of 'wound' is due to the semantics of the suffix, which Rodrigues (2008) and Rodrigues & Rio-Torto (2013) characterised as [referentiation]. The suffix only operates with verbs denoting concrete events and it specifies the 'event' as such and 'something concrete that results from the event'. Apart from 'wound', the concrete result may be 'residue' and 'portion', which we will see next.

### 3.2.1.2 Concrete result 'residue' and 'portion'

As stated in Rodrigues & Rio-Torto (2013: 168), the feature [referentiation] enables "[...] a segmentation and an identification of a certain event, detaching it from the continuum of realia. The semantic effect of this affix is not to provide an event shade of the event, i.e., [durative], [actualised], etc., but simply to identify it as a referent [...]".

The derivatives with the suffix *-dura* that designate a 'portion' (4,94%) or a 'residue' (2,74%) are highlighted, not because of their percentage, but because these meanings are not represented in other deverbal nouns than *-dur(a)* derivatives.

Portions:

*andadura*: 'walked distance', *singradura* 'a day's sail or run; the distance travelled in one day', *enfiadura* 'needleful', *arrancadura* 'portion of something that is pulled out in one go', *chupadura* 'quantity of what is sucked in one go', *ensaboadura* 'quantity of cloth that is washed at one time', *semeadura* 'quantity of seed to be sown in a plot of land', *descosedura* 'unsewn portion', *amassadura* 'batch of bread to be kneaded', *assadura* 'portion of meat to be roasted', *cozedura* 'batch of bread to be cooked', *moedura* 'quantity of olive to be pressed', *aradura* 'portion of land to be ploughed', *provadura* 'portion of food/drink to be tasted', *envergadura* 'wingspan', *encetadura/encertadura* 'portion of bread, cake that is taken from the whole', *mungidura* 'quantity of drawn milk', *atestadura* 'portion of liquid that is needed to fill a barrel'.

Residues:

*corredura* 'the rest of a liquid which remains in the measuring vessel', *vertedura* 'amount of liquid that overflows', *capaduras* 'cut testicles of an animal', *serradura* 'sawdust', *cevadura* 'remains of animals which have been used as bait or lure', *alimpaduras* 'chaff: the husks of corn or other seed separated by winnowing or threshing', *raladura* 'scrapings', *limadura* 'filings', *varredura* 'sweepings', *cerceadura* 'clippings'.

### 3.2.2. Primary meanings

#### 3.2.2.1 Event 'sound'

The totality of the 31 event deverbal nouns bearing the suffix *-id(o)* mean 'sound'. It may be argued that derivatives of *-id(o)* are not in competition with suffixes such as *-ção* or *-ment(o)*, arguing they are not event nouns, but result nouns, given that their meaning is 'sound'. However, it is precisely because they mean 'sound' that derivatives of *-id(o)* are both event and result nouns.

According to the *Acoustical Society of America Standards* (<http://asastandards.org>), a sound is “(a) Oscillation in pressure, stress, particle displacement, particle velocity, etc., propagated in a medium with internal forces (e.g., elastic or viscous), or the superposition of such propagated oscillation. (b) Auditory sensation evoked by the oscillation described in (a)”.

The first definition of sound, coming from physics, specifically from acoustics, shows that a sound is an event; the second definition, coming from psychoacoustics, shows that a sound is a result. If one still has doubts, one can see the definition of *oscillation*, which, according to the *Acoustical Society of America Standards*, is “Variation, usually with time, of the value of a quantity with respect to a specified reference when the value is alternately greater and less than the reference”. If one looks at the definition of *auditory perception*, one sees it is the “Interpretation of auditory sensations as meaningful events through the sense of hearing”. Remember also that an event is dependent on the existence of objects, instantiation of properties and time (Kim 1993; Rodrigues 2008: 101-103).

Linguistically, derivatives of *-id(o)* are events, as highlighted by the occurrences with *dar-se* and *ocorrer* ‘to occur’, and *durar* ‘to last’, found in corpora (examples 1 to 8):

- *ocorrer* / *dar-se*:

(1) «Mal me tinha sentado no banco, ele so ergueu-me, deu-se um estalido horrível e de repente, as dores tinham desaparecido.»<sup>1</sup> ‘I had barely sat down on the stool, he lifted me, there was a horrible snap and suddenly, the pain had disappeared’.

(2) «Eles retiraram o barril de baixo, deu-se um estalido de rachadura»<sup>2</sup> ‘They took the barrel out from under me, there was a cracking snap’.

(3) «Deu-se um estampido, penetrante como um tiro, e a luz que inundava o bosque desapareceu.»<sup>3</sup> ‘There was abang, as piercing as a shot, and the light that flooded the wood disappeared’.

<sup>1</sup> [https://books.google.pt/books?id=8k6uzmj0hulC&pg=PA68&lpg=PA68&dq=%22deu-se+um+estalido%22&source=bl&ots=V7nj-ruCK7&sig=KMiy2xkHc\\_ng1lgkBZ7nNpOguyM&hl=pt-PT&sa=X&ved=0ahUKEwiCkeq-7vbUAhUCOxQKHyn4DrwQ6AEIKDAA#v=onepage&q=%22deu-se%20um%20estalido%22&f=false](https://books.google.pt/books?id=8k6uzmj0hulC&pg=PA68&lpg=PA68&dq=%22deu-se+um+estalido%22&source=bl&ots=V7nj-ruCK7&sig=KMiy2xkHc_ng1lgkBZ7nNpOguyM&hl=pt-PT&sa=X&ved=0ahUKEwiCkeq-7vbUAhUCOxQKHyn4DrwQ6AEIKDAA#v=onepage&q=%22deu-se%20um%20estalido%22&f=false)

<sup>2</sup> [http://textosdemetafisica.blogspot.pt/2011/12/morte-um-rito-de-passagem\\_29.html](http://textosdemetafisica.blogspot.pt/2011/12/morte-um-rito-de-passagem_29.html)

<sup>3</sup> <http://noticiasdafantasia.blogspot.pt/2009/04/excertos-stardust-o-misterio-da-estrela.html>

(4) «na cozinha, deu-se um estampido»<sup>4</sup> 'There was a bang in the kitchen'.

(5) «Provavelmente ocorreu um gemido em sua alma»<sup>5</sup> 'There was probably a wail in your soul'.

(6) «Ocorreu um zunido, falta de potência e patinação no desenvolver da velocidade»<sup>6</sup> 'There was a buzzing, a lack of power and faltering in the development of the speed'

- *Durar* 'to last':

(7) «O rugido durou cerca de cinco segundos.»<sup>7</sup> 'The roar lasted about five seconds.'

(8) «Tenho até um pouco de sorte, já que tudo agora está mais quieto (agora, sim, pois o zumbido durou muitas semanas até diminuir a um nível plenamente suportável)»<sup>8</sup> 'I really am quite lucky, since everything is now more quiet (now, yes, since the buzzing lasted many weeks until it decreased to a more bearable level).'

### 3.3 Deverbal nouns from the same base

The coexistence of derivatives from the same verb with different suffixes manifests a specialisation. The noun *encabrestadura* means 'wound resulting from the halter' whilst *encabrestamento* means the 'event of putting the halter on the horse'. Other examples of this type of contrast are provided by *escoamento* and *escoadura*. The first one designates 'event of draining off' and the second, besides the meaning of 'event', also conveys 'remnant of liquid that has been drained off'. The examples of *estaladura* 'split' and *estalido* 'pop' also manifest the specialisation of the suffixes. Each suffix has the capacity to select the features of the verb it may operate with. The verb *estalar* means 'to split' and 'to snap, to pop'. The suffix *-dur(a)* operates with the first meaning, whereas the suffix *-id(o)* operates with the second one.

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<sup>4</sup> <http://blogdojuquita.blogspot.pt/2013/10/anos-de-chumbo.html>

<sup>5</sup> <https://www.ideasnacoes.com.br/cgi-sys/suspendedpage.cgi>

<sup>6</sup> [https://www.reclameaqui.com.br/nissan-do-brasil/mau-funcionamento-cambio-cvt\\_F1jdvZgcthFqvXKO/](https://www.reclameaqui.com.br/nissan-do-brasil/mau-funcionamento-cambio-cvt_F1jdvZgcthFqvXKO/)

<sup>7</sup> <http://kuriosamente.blogspot.pt/2016/01/misterio-sons-estranhos-reaparecem-nos.html>

<sup>8</sup> <http://sites.mpc.com.br/albuquerque/editoria/editor1.htm>

#### 4. Consequences for word formation theory

The fact that affixes operating within the same word formation schema find niches should not be understood as a sign of a chaotic dynamism of word formation. On the contrary, those niches indicate that word formation is a dynamic organised domain, because niches reflect patterns that the speaker's mind constructs from language usage.

The organisation of word formation patterns mirrors an architecture constituted by different structures and tiers. The organisation is built upon patterns of different levels: from macro-patterns to micro-patterns.

A word-formation schema such as those formulated by Aronoff (1976) and Corbin (1989) corresponds to a macro-pattern. For the definition of this macro-pattern, there is a correlation between the category of the base, the category of the product and the meaning of the latter. In line with this idea, event/result/state deverbal nouns correspond to a macro-pattern.

The fact that affixes operating in the macro-pattern do not display exactly the same behaviour between them is a manifestation of the existence of specialisations of the affixes. Those specialisations, or niches, correspond to micro-patterns. Specialisations are regularities observed among the derivatives of a particular affix. Rodrigues (2008) indicates three derivatives with the suffix *-ment(o)* meaning 'wound' (*ferimento* 'any kind of injury', *alanceamento* 'wound made by a lance', and *laidamento* 'concussion'). In the universe of 1458 derivatives with the suffix *-ment(o)*, it represents a percentage of only 0,2. In this case, there is no specialisation of the suffix *-ment(o)* in the semantic field of 'wound'. In the case of the derivatives of the suffix *-dur(a)* meaning 'wound', these correspond to a percentage of 10,81% in a universe of 394 derivatives. In the case of the derivatives of the suffix *-id(o)*, the specialisation in the meaning of 'sound' is total. Thus, in relation to the suffixes focused on in this paper, one can state there is a degree of regularity in the behaviour of *-id(o)* regarding the meaning of 'sound', a semi-regularity in the behaviour of *-dur(a)* regarding the meaning of 'wound', and a non-regularity in the behaviour of *-ment(o)* regarding the meaning of 'wound'. If there are regularities or semi-regularities, one can state there are patterns that correspond to derivational paradigms.

The analysis of the corpus and of derivatives in corpora indicates that the level of specialisation varies, with some suffixes at a higher level on the specialisation scale (e.g., suffix *-id(o)*), while others are at an intermediate level (e.g., *-ment(o)*). The greater the selectional restrictions are, and the lower the variances in meaning, the higher the specialisation of the suffix, and vice-versa. Nevertheless, Rodrigues (2008) states that there are always structural constraints that preclude the zero degree of specialisation. According to the analysis of Rodrigues (2008), even a suffix such as *-ção*, which is the most productive, shows some degree of specialisation.

## 5. Conclusions

The approach presented by Lindsay & Aronoff (2013), Aronoff & Lindsay (2014, 2015) and Aronoff (2016) constitutes a Darwinian explanation for the maintenance in the system of different operators playing, apparently, the same role. In this paper we have applied the Darwinian perspective to the analysis of three (*-id(o)*, *-ment(o)* and *-dur(a)*) of the fifteen suffixes that operate the formation of event / result / state deverbal nouns in Portuguese. The analysis was conducted through an initial corpus constituted by 8414 event deverbal nouns and 13708 meanings of those nouns (Rodrigues 2008), which were added to 31 event deverbal nouns bearing the suffix *-id(o)*. The derivatives of the three suffixes under focus here were searched in corpora, which corroborated data provided by the analysis of the corpus.

Although operating in the same word formation schema, which is defined by the formal and semantic relations between verbs and event deverbal nouns, a close analysis of the behaviour of each affix and of the meanings of the derivatives shows that they each have a specialisation that enables them to survive in the system.

According to a paradigmatic approach to derivational morphology, verb / event deverbal noun pairs constitute a schema or macro-pattern that i) serves as guideline for the formation of new words (the dynamic aspect of the paradigm (Štekauer 2014)) and ii) binds the relationships between each member of each one of the pairs that compose the paradigm (the static aspect of the paradigm (Štekauer 2014)).

The analysis of event deverbal nouns with different suffixes reveals regularities and semi-regularities among the derivatives sharing the same suffix which contrast with the derivatives composed of other suffixes. This implicates that there are micro-patterns inside a macro-pattern that regulate the relationships between verbs and event deverbal nouns, depending on the suffix involved in the formation of the last ones.

In terms of a Darwinian perspective, micro-patterns correspond to the niches or specialisations of each suffix operating within the same macro-pattern. Micro-patterns correspond to regularities or semi-regularities that may be observed in a) selectional restrictions that regulate the adjunction of affixes to bases and b) the possible general and secondary meanings of the products of each one of the suffixes.

The analysis of the derivatives of the suffixes *-id(o)*, *-ment(o)* and *-dur(a)* permits us to understand that the suffix *-id(o)* manifests a specialisation both in selectional restrictions mediating the relationships between the affix and the potential bases and in the meaning of 'sound'. Both specialisations are shared by the totality of the 31 derivatives that we have found. The suffix *-dur(a)* shows a lower level of specialisation than the suffix *-id(o)*, since the identified semi-regular patterns in the field of selectional restrictions as well as in the field of secondary meanings do not apply to the totality of the event deverbal derivatives of the suffix. The same occurs with the suffix *-ment(o)*, whose level of specialisation is lower than the levels of the precedent suffixes.

Specialisations of affixes operating in the same schema or macro-pattern explain why those affixes prevail in the system, although being apparent rivals within the macro-pattern.

Specialisations may be explained by the fact that there are subtleties in the meaning of 'event'/'result'/'state' that need a specialised suffix to be expressed. This may be understood if one extends the maximisation of opportunity principle formulated by Libben (2014) to the coexistence of derivational suffixes bearing similar (not equal) roles that enable the formulation of subtle meanings.

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