

Domain, Domain Features of Lexical Functions, and Generation of Values by analogy according to the MTT approach

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Abstract

The purpose of the work here presented is to show the convenience of studying the Domain of Lexical Functions, that is, the paradigm of Lexical Units for which each Lexical Function was created. The definition of Domain of Lexical Function concept, coined but not developed in MTT, allows us to define the concept of Domain Features and to describe nouns attached to every LF. Both concepts provide a new working methodology, the Generation of Values by Analogy, and prove that many of the collocations are characterized by some kind of semantic motivations².

1 Introduction

In the same manner as the base of a collocation imposes some restrictions on the collocate (especially in support verbs), Lexical Functions (LFs) also impose restrictions on their arguments. These restrictions, which I refer to as domain features, can be defined when studying the domain of LFs, that is, the paradigm of the lexical units for which each LF was defined. I have described the domains and defined the domain features of those LFs which are the most productive in Spanish: fulfillment verbs, support verbs, phasal verbs and causative verbs.

With the aim of carrying out this study, it was necessary to collect a considerable amount of data in Spanish. In order to obtain examples efficiently, the principle of 'lexical inheritance' (Mel'čuk & Wanner, 1996) was extended and applied to the domain of LFs. In the research work here presented, the *generation of values by analogy* is proposed based both on the semantic motivation of many collocations and the systematization of those lacking motivation. The extension of this principle maintains that those lexical units sharing a semantic label can inherit their LFs values³ automatically, as (1)-(3) shows:

- (1) **Real_I**('clothes') = **Real_I**(skirt) = **Real_I**(trouser) = **Real_I**(shirt) = *to wear*
- (2) **IncepReal_I**('clothes') = **IncepReal_I**(skirt) = **IncepReal_I**(trouser) = **IncepReal_I**(shirt) = *to put on*
- (3) **FinReal_I**('clothes') = **FinReal_I**(skirt) = **FinReal_I**(trouser) = **FinReal_I**(shirt) = *to take off*

In order to implement and validate this proposal, a database has been designed. This database, known as *BADELE.3000* (Barrios & Bernardos, 2007), contains 3,300 nouns, which are the most frequent in the Spanish language spoken in Spain. With this database, approximately 9,000 lexical relations were obtained automatically. Moreover, it was possible to add some other lexical relations found in the combinatorial dictionaries of Spanish (Bosque, 2006; 2004). In fact, a total of 20,700 relations were formalized by means of LFs.

The directionality of the lexical selection seems to be conflictive. The MTT approach defends that the base of a collocation selects the predicate, while Bosque's approach (2004) proposes that it is the

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³ For the concepts glosses and default values see Alonso Ramos (2006).

predicate that selects its arguments. The study of the domain of LFs demonstrates that these opinions are complementary. In fact, *lexical selection* is used with a different sense in each approach. For Meaning Text Theory, its sense is affected by the predominance of a communicative point of view. For Bosque, the grammatical point of view is the predominant one. Precisely, the study of the glosses and the values of the LFs here developed integrates both approaches: glosses and values are selected by their arguments, but at the same time, when the meaning is preserved, they impose semantic restrictions on their arguments.

The structure of the paper is organized as follows. Section 1 defines the domain of LFs and the generation by analogy of the values of LFs. Section 2 describes fulfillment domain features. Section 3 describes support domain features. Section 4 describes the phasal domain features. Section 5 describes some causative domain features. Section 6 deals with the problems of semantic motivation in collocations and the directionality of lexical selection. Finally, section 7 summarizes the conclusions.

2 Domain of LFs, Domain features and generation by analogy of the values of LFs

Lexical Functions were introduced and developed within the Meaning – Text theory (Mel'čuk, 1996). Among the mathematical concepts related to *function*, it is interesting to pay attention to the term *domain*. In the mathematical field, it is the set of all the possible values that a function is defined for. Similarly, as Mel'čuk proposes,

The *domain of the lexical functions* is here understood as the set of LUs for which each LF was defined, in other words the set of arguments of every LF.

Definition 1: Mel'čuk's (1996:76) definition of LF Domain

For instance, **Oper₁** domain contains lexical units (LUs) such as *lecture (to give a lecture)*, *class (to teach/ hold a class)*, *walk (to have a walk)*, *support (to lend support)*, *control (to have control over)*, etc. LF domain must be understood as a potential domain: the set of LUs for which the LF has a potential meaning, but not necessarily a value.

As the next sections will show, most of LFs impose semantic conditions on their keywords, so LFs domain features can be defined as follows.

LFs domain features are semantic features essential for each LF keyword, in so far as a LF calls this features for their keywords. One or more features can be characteristic of every LF.

Definition 2: LFs Domain features

Many LFs domains contain one or more semantic field. Other approaches, different from the MTT approach, such as Pustejovsky's generative lexicon (1995) and WordNet's lexical database⁴ are based on *semantic inheritance*, i.e. the semantic classification of lexemes (for example, *cat*, *dog* and *horse*) into a class (in this case, ANIMAL) which includes all the semantic features they share. Mel'čuk and Wanner (1996) apply the semantic inheritance to the lexicographic representation and propose the *Lexical Inheritance Principle*⁵, which they implemented and validated for the lexical field of emotion in German. Thus, it will be possible to foretell that the verb *to feel* combines with every lexical unit meaning 'emotion'. Sanromán (2003) employed the lexical inheritance principle⁶ applied in the *DiCE* (Alonso

⁴ <http://wordnet.princeton.edu/>

⁵ Although the principle of lexical inheritance had already been applied to some entries of the *DECFC* (cf. , *DECFC* vol. IV, p. 166, the entry *carotte_{l.c}* relating to *legume*), Mel'čuk and Wanner (1996) were the ones who introduced it. Their idea could be summarized by the paragraph: "The semantic features of words that share some values for certain syntagmatic LFs can be analyzed. It must be possible to generalize restricted lexical co-occurrence instantiations along semantic lines".

⁶ Chapter 3 contains a description of Spanish emotion nouns based on the concept of lexical inheritance.

Ramos and Sanromán: 2000), which is a database based on the MTT principles⁷. Both authors followed Mel'čuk and Wanner's methodology and applied it to the same lexical field, viz. emotions, in Spanish. The *DiCE* contains some shared values for some LFs. As in German, the verb *sentir* (to feel) is a shared value for **Oper**₁ for emotion Spanish words. Sanromán (2003:89) proved that collocations are at least partially semantically motivated. Outside the framework of the MTT, such a principle has been implemented in a certain way by Bosque (2006) in the *Diccionario Combinatorio Práctico del Español* (Practical Combinatory Dictionary of Spanish), which contains common collocatives for many different entries grouped in 18 generic ones.

It is possible to apply the Lexical Inheritance Principle in more than one way because there are several possible generalizations about values (Mel'čuk, 1996: 76-78), among others, the values of the LFs can be shared by the keywords (as *to feel* by emotion nouns, or *to drive* by motor-vehicle nouns). But, in my view, it is also possible to generalize about LFs themselves, because they impose restrictions on their keywords, and, consequently, the keywords share some semantic properties. Actually, the keywords belonging to the same LF domain usually share both domain features and the semantic label (the semantic label corresponds to the first part of the definition of the *keyword*, as 'animal' and 'food' for *lamb*, see Polguère, 2003:43).

In this sense, there is another way of application of the Lexical Inheritance Principle not mentioned by Mel'čuk: the notion of the domain of a LF opens a way to propose an extension of the *Lexical Inheritance Principle*, what I call the *generation by analogy of the values of LFs*:

Values of LFs often correlate with semantic features of their keywords. Therefore, LUs belonging to the same LF domain and having the same semantic label often share LF values.

Definition 3: Generation by analogy of the values of LFs

The *generation by analogy of the values of LFs* is the key-concept for this work. The use of this principle allows us to get several Spanish values of Lexical Functions for some lexical fields automatically, as (1)-(3) showed. However, there is another way to implement the generation, by paraphrases of some LFs. For example, the LF called **CausFunc**₀ means 'to cause something to begin to exist'. Then the semantic labels of the nouns that can be combined with a verb that means 'to cause something to begin to exist' were selected, among others, *ropa* (clothes), *obra artística* (artistic work), *vivienda* (accommodation), *energía* (energy). They were related to the lexical units that express **CausFunc**₀ sense –for instance, *confeccionar* (to make clothes), *componer* (to compose artistic works), *construir* (to build accommodation), *producir* (to produce energy), etc. All the lexical units under these semantic labels inherited automatically these verbs, as (4)-(9) shows:

- (4) **CausFunc**₀ = 'causar que algo empiece a existir'
CausFunc₀ = 'to cause something to begin to exist'
- (5) 'Causar que algo empiece a existir' = confeccionar, componer, construir, producir, etc.
'To cause something to begin to exist' = to make, to compose, to build, to produce, etc.
- (6) **CausFunc**₀(ropa) = *confeccionar* > confeccionar una camiseta/ pantalones/ falda, etc.
CausFunc₀(clothes) = *to make* > to make a T-shirt/ trousers/ skirt/ etc.
- (7) **CausFunc**₀(obra artística) = *componer* > componer un poema/ libro/ argumento, etc.
CausFunc₀(artistic work) = *to compose* > to compose a poem/ book/ plot/ etc.
- (8) **CausFunc**₀(vivienda) = *construir* > construir una casa/ rascacielos/ apartamento, etc.
CausFunc₀(accommodation) = *to build* > to build a house/ skyscraper/ apartment/ etc.
- (9) **CausFunc**₀(energía) = *producir* > producir luz/ gas/ petróleo, etc.
CausFunc₀(energy) = *to produce* > to produce light/ gas, petrol, etc.

⁷ Diccionario de colocaciones del español. Alonso Ramos. <http://www.dicesp.com>

Finally, other verbs from the Spanish combinatory dictionaries (Bosque: 2004; 2006) were added (*escribir, esbozar, crear un poema*; *to write/ draft/ create a poem*, etc.). The implementation of the domain inheritance principle allowed us to obtain automatically more than 9,000 collocations and, at the same time, to validate the principle itself.

This principle allows to formulate very plausible hypotheses, which are later checked.

On the following pages, some collocations which were obtained automatically will be shown, as well as the domain features defined for each family of LFs.

3 Fulfillment verbs

The values of LFs **Real_{0/i}**, **Fact_{0/i}** and **Labreal_{ij}** are *fulfillment verbs* and mean ‘to fulfill the requirement of L’, or ‘to do with L what you are supposed to do with L’, or ‘L fulfils its requirement’ (Mel’čuk, 1996, 68). Mel’čuk’s examples of the collocations covered by these LFs are *to prove an accusation, to drive a bus, to ride on bus, to take hint, to come true (hope)*. The implementation of the generation by analogy (we found 577 relations between semantic labels and fulfillment LFs, such as *to put the clothes on, to take the clothes off, to wear the clothes*, etc.) allowed us to arrive automatically at a paradigm of 3,995 Spanish examples. After adding those collocations that were obtained non automatically, there was a total of 5,171. Some examples are: *el coche no funciona, the car doesn’t work; la ley surtió los efectos deseables, the law produced effects we find desirable; segar (algo) con la hoz, to reap (something) with the sickle; barrer (el suelo) con la escoba, to sweep (something) with the broom; escribir (algo) en un folio, to write (something) on a sheet of paper*.

ULs belonging to the fulfillment domain have some common semantic characteristics which allow defining fulfillment domain features: ‘finality’, ‘utility’ and ‘expectability’. The two first features are present on most of the LUs, such as *the bullet hit her on the arm* (the finality of a bullet is to hit or kill), *a flute sounds* (the finality of a flute is to sound) and *an apple tree that doesn’t bear fruit* (the utility of a fruit tree is to bear fruit). The last feature is typical of abstract nouns, such as *admiración* (admiration), *memoria* (memory), *recuerdo* (memory, remembrance), *juicio* (trial), for which this feature is expressed by the collocations *mostrar admiración* (to show admiration), *retener en la memoria* (to keep it in one’s head), *guardar los recuerdos* (to keep it in one’s head), *ganar un juicio* (to win a court case).

4 Support verbs

The values of LFs **Oper_i**, **Func_{0/i}** and **Labor_{ij}** are called *support verbs*. They are not necessarily semantically full, but frequently emptied. Their keyword presupposes actants, they are predicates (Mel’čuk, 1996, 68). Some of Mel’čuk’s examples of the collocations covered by these LFs are *to deal a blow, to receive a blow from, blow comes from, blow falls upon, to put up resistance, to meet resistance, to give an order, to receive an order*.

In contrast with fulfillment LFs, because of support verbs’ lack of meaning, it is not possible to arrive at some support verbs paraphrases and to foretell the values of these LFs. However, most of the support verb collocations are equivalent to some other verb⁸, as it is the case of *to bang/ beat/ hit* and *to deal a blow, to resist* and *to put up resistance, to order* and *to give an order*. Then it is at least possible to predict the keywords of these LFs: nouns whose meaning is equivalent to the meaning of some verbs (*blow/ to beat; resistance/ to resist; order/ to order*). All these nouns were extracted from the database (they had been grouped previously by semantic label). The study of these Lexical Units allowed to predict the support verb domain⁹ and to define the support verbs domain features¹⁰. Then 1331 support verbs collocations

⁸ Our database contains 777 support verb collocations; more than 700 have an equivalent verb.

⁹ Due to lack of space, it is not possible to describe how it was predicted, but first, we listed **Oper_i** keywords (by the existence of equivalents verbs), and after we checked which of them were **Func_i** and **Labor_{ij}** keywords. In order to know the differences between each support verb LF, see Mel’čuk, 1996.

¹⁰ It is not possible to predict LUs belonging to the **Labor** domain. I found few examples in our database: *someter a alguien a juicio, someter a juicio, llevar a alguien a juicio, dejar algo/alguien en el abandono, tener algo en venta*.

were included in our database, 993 of them obtained automatically by 134 pairs of semantic labels and default values.

Func₀ keywords were excluded in the process. I think that **Func₀** is a LF different from **Func_i**, **Oper_i** and **Labor_{ij}**, because there is a paraphrase of the **Func₀** meaning ('it does exist'), but it is not possible to find any meaning for the other three LFs, but default glosses (Alonso Ramos, 2006). Differences among **Func_i**, **Oper_i** and **Labor_{ij}** are purely syntactic, as shown by the fact that most of the **Func_i** and **Labor_{ij}** keywords are also **Oper_i** keywords, while many of **Func₀** keywords are not always **Oper_i** keywords¹¹.

To my knowledge, the domain feature of **Func₀** is 'something that exists doing something in a specific way', or more simply, 'general situation', feature which is present in keywords such as *lluvia* (*la lluvia cae*), *rain* (*the rain falls*); *viento* (*el viento sopla*), *wind* (*the wind flows*); *fuego* (*el fuego quema*), *fire* (*the fire burns*); *luz* (*la luz brilla*), *light* (*the light shines*). However, domain features of **Func_i**, **Oper_i** and **Labor** are: a) 'action that someone/something realizes' (present in words such as *paseo* (*walk*), *advertencia* (*warn*), *ocupación* (*occupation*), *orden* (*order*), *grito* (*cry*), which produces collocations such as *dar un paseo*, *to go for a walk*, etc.); b) 'someone/ something's property' (present in words such as *capacidad* (*ability*), *inteligencia* (*intelligence*), *simpatía* (*friendliness*), *amplitud* (*spaciousness*), which produces collocations such as *tener capacidad*, *to have an ability*, etc.); c) 'someone/ something's situation' (present in words such as *frío* (*cold*), *desgracia* (*misfortune*), *choque* (*collision*), which produces collocations such as *tener frío*, *to be cold*, etc.)

5 Phasal verbs

The values of LFs **Incep**, **Cont** and **Fin** are called *phasal verbs*. They are semantically full, and mean 'to begin', 'to continue' and 'to finish', respectively. Their keywords are verbs or verbal LFs, such as fulfillment and support verbs LFs (more details in Mel'čuk, 1996, 64-65). Some of Mel'čuk's examples of the collocations covered by these LFs are *to open fire* and *to fall under the power of*, for **Incep**; *to retain one's power over*, *the offer stands for* for **Cont**; and *to lose one's power* for **Fin**.

Because of their semantic properties, phasal LFs impose on their keywords only the grammatical condition 'to be a verb'. This explains why these LFs combine with fulfillment and support LFs. This peculiarity implies that phasal verbs domains are a subdomain of the fulfillment and support verbs domains. For instance, *joy* and all the nouns of feelings belong to the phasal domain (*nace un sentimiento*, *a feeling is born*) and, as it was mentioned above, also to the support verb domain (*sentir alegría*, *to feel joy*)¹². Consequently, the semantic labels of fulfillment and support verb domains were reviewed in order to select those for which it is possible to predicate 'it begins P', 'it continues P', 'it finishes P', where P is a fulfillment or a support verb. Then, the most productive phasal LFs (**IncepFunc**, **FinFunc** and **IncepReal**) were inherited. However, in my view **IncepFunc₀**, **ContFunc₀** and **FinFunc₀** are different from the rest of phasal LFs, because their domains are independent of fulfillment or support verbs, and it was possible to foretell their keywords by LFs meanings ('to start/ continue/ finish to exist'), and to arrive at *erosion starts/ finishes*, *hate comes out/ melts away*, *love is born/ disappears*, *light arises/ dies out*, *the sunset arrives*. More than 3,600 phasal verb collocations were obtained, 1,277 of them automatically by 154 pairs of semantic labels and glosses.

Domain features of phasal LFs were described; they allow us to distinguish and define five kinds of phasal nouns (all of them are for situation nouns): *period*, *state*, *punctual nouns*, *lasting nouns*, *process nouns*.

¹¹ In our database there are some examples of **Func₀** collocations which have keywords that are also **Oper_i** keywords, such as *consumarse una desgracia* (*a misfortune happens*): its **Oper_i** collocation is *caer en/ sufrir una desgracia* (*to fall from favour*); *collision*, *producirse un choque* (*a collision is on*), its **Oper_i** collocation is *sufrir un choque* (*to suffer a collision*); *tener lugar una revolución* (*a revolution takes place*), its **Oper_i** collocation is *hacer una revolución* (*to make a revolution*). Some **Func₀** keywords that do not belong to **Oper_i** domain are *fuego* (*fire*); *luz* (*light*); *viento* (*wind*); *lluvia* (*rain*); *ola* (*wave*); *alba* (*daybreak*); *trueno* (*thunderclap*); *rayo* (*ray*), etc.

¹² Fontenelle (98) describes words like *anger* and *enthusiasm* in terms of LFs showing that they are phasal verbs with a beginning, a continuation phase, a culmination and an end.

1) *Punctual nouns* design instantaneous phenomena such as *rayo* (ray), *chispa* (spark), *chirrido* (creaking). They do not combine with *durar* (to last) and *durante* (during/for), and for these LUs, LFs **IncepFunc₀** and **Func₀** are expressed by the same values (this phenomenon is called overlapping of LFs), as it occurs in *caer un rayo* (the lightning struck), *saltar una chispa* (a spark flew). 2) *Lasting nouns* design events that can be a bit lasting, such as *tormenta* (storm), *enfermedad* (illness), *crisis* (crisis). They combine with *durar* (to last) and *durante* (during/for). 3) *Periods* are nouns of limited duration, such as *minuto* (minute), *mes* (month), *año* (year). They only combine with *durante* (during/for). 4) *States* are nouns that design events that can be quite lasting (their meaning doesn't demand necessarily an end), such as *paz* (peace), *matrimonio* (marriage), *fama* (fame); they only combine with *durar* (to last). 5) *Process nouns* design events that can be a bit lasting, such as *alba* (daybreak), *anochecer* (night fall), *oxidación* (oxidation). Like lasting nouns, they combine with *durar* (to last) and *durante* (during/for); and like punctual nouns, there is an overlapping of LFs **IncepFunc₀** and **Func₀**, *llegar el anochecer* (nightfall arrives), *producirse la oxidación* (oxidation is on).

Domain features of phasal verbs for concrete nouns were not found, although they could be expressed approximately as 'that can be begin/ continue/ finish P', where P is a fulfillment verb. However, this feature does not depend necessarily on linguistic characteristics: for example, the expression *to put on a hat* exists because in our world, it is the beginning action for wearing a hat.

6 Causative verbs

The values of LFs **Caus**, **Perm** and **Liqu** are called *causative verbs*. They are semantically full and mean 'to cause', 'to allow' and 'to liquidate', respectively. Their keywords are verbs or verbal LFs, such as fulfillment and support verbs LFs (more details in Mel'čuk, 1996, 65-68). Some of Mel'čuk's examples of the collocations covered by these LFs are *to lead opinion*, *to raise hope in*, for **Caus**; *to condone an aggression* for **Perm**; and *to stop an aggression*, *to wipe out the traces* for **Liqu**.

In the same way that phasal LFs, causative LFs impose on their keyword the grammatical condition 'to be a verb'. Consequently, causative verb domains are also a subdomain of fulfillment and support verb domains. However, in my view, **CausFunc₀**, **PermFunc₀** and **LiquFunc₀** are different from the rest of causative LFs. They contain phasal LFs inside, as show their meanings, 'to cause that something starts to exist', 'to cause that something continues to exist' and 'to cause that something finishes to exist', respectively. That explains why, as in the case of phasal LFs, it was possible to foretell their domains.

In the same manner as in section 4, semantic labels of fulfillment and support verb domains were reviewed in order to arrive at the rest of causative LFs keywords. In my view, **CausFact₀** can be paraphrased as 'to cause + verb', where the verb is the value of **Fact₀**: for instance, *to play a guitar* means 'to cause the guitar to sound' (*to sound* is the **Fact₀** value). To my knowledge, it is possible to find similar paraphrases for causative fulfillment LFs.

It was not possible to define causative domain features, except for two groups of LFs. The first one is **CausFunc₀**, **PermFunc₀** and **LiquFunc₀**, the keywords of which are predictable. Their feature is 'there is an external or an internal agent that can cause that this exist'. We have proposed the name of *causative noun* only for those nouns belonging to these domains. These are nouns that combine with verbs having a first argument that is the 'causer' of what is designated by the noun.

There is a second one group, the group of LF **Caus₂Func₁**, that is quite productive on emotions lexical field, such as *despertar admiración* (to arise admiration), *inculcar cariño* (instill affection), *provocar celos* (to provoke jealousy). Its domain feature is 'Y can provoke that X feels this emotion', where X and Y are the first and second actant of the keyword.

7 Semantic motivation and directionality of lexical selection

The semantic motivation of LFs is not well accepted by most of MTT scholars, because there are abundant examples that show how synonym bases select different values, such as *dar un beso* (to give a kiss) / **dar una caricia* (to caress); *hacer una advertencia* (to give a warning to someone) / **hacer un*

aviso (to give someone an advice); *tomar una resolución*/**tomar el propósito* (to adopt a resolution); *hacer un préstamo* (to give a loan to somebody)/ **hacer una ayuda* (to help) (see Alonso Ramos, 1998).

In spite of that, according to Apresjan, semantic motivation of LFs is present even in support verbs LFs: “motivation is sufficiently great to provide a foundation for stating the general trends and forming useful lexicographic expectations, although it is insufficient for formulating rules” (Apresjan, Glovinskaja, 2007). Empirical evidence corroborates Apresjan’s hypothesis, as his examples shows, such as *to carry on* + ‘activities’ (*research, work*), *to undergo* + ‘processes’ (*a change, decomposition, deformation*), *to be in* + ‘state’ (*confusion, despair, ecstasy*), etc. As Apresjan says, theoretical evidence comes from “the fact that the values of any collocate LF (...) obey the general laws of semantic agreement between collocating items in the text. But semantic agreement consists in the recurrence of a certain semantic component in the meaning of two collocating items”.

Apresjan’s evidence in favour of semantic motivation is in accordance with Bosque (2006, 2004) works. Bosque’s two dictionaries follow the sense collocative > base, whereas MTT dictionaries follow the sense base > collocative. Bosque thinks the collocatives keep their meanings, and he points out that the collocatives impose restrictions on their bases. That explains why on his dictionaries nouns entries were obtained automatically, while verb, adjective and adverbial entries were written manually.

Bosque argues that the direction base > collocative is justified by what he calls *categorización multiple* (multiple categorization): verbs, adjectives and adverbials shows different meanings. For instance, the verb *leer* (to read) is a speech verb, as proved by the combination *leer en voz alta* (to read something aloud); this collocative is shared by other Spanish speech verbs, such as *hablar* (to speak), *decir* (to say), *quejarse* (to complain). But *leer* is also a perception verb, as proved by *leer de refilón* (out of the corner of one’s eye); this expression can be combined with other Spanish perception verbs, such as *ver* (to see), *mirar* (to look), *tocar* (to touch). And finally, *leer* is also a consumption verb, as proved by *leer compulsivamente* (to read compulsively); this adverb combines with other Spanish consumption verbs, such as *comer* (to eat), *fumar* (to smoke), *comprar* (to buy).

Sections 3 and 4 of this work indicate that domain features of fulfillment and support verbs are semantic features: the meanings ‘finality’, ‘utility’ and ‘expectability’ correspond to the fulfillment verbs and the meanings ‘someone/something’s action’, ‘someone/ something’s property’, and ‘someone/ something’s situation’ correspond to support verbs. As it was shown in section 5, it is not possible to define phasal domain features by meanings, but by grammatical properties¹³. Likewise, in section 6 only two causative domain features were defined. However, in my view, the fact that fulfillment and support verbs domain features are semantic features holds up the hypotheses of the semantic motivation of many of the collocations (as it was explained, phasal and causatives domain are known thanks to the fulfillment and support verbs domain).

Empirical evidence of semantic motivation was also obtained on the database *BADELE.3000* applying the domain inheritance principle. Apart from the examples already mentioned (where families of nouns semantically close share values of LFs), there are some other data that can corroborate the same hypotheses. For instance, *caer* (to fall down?) selects as first argument a noun with a meaning that requires the sense of ‘moving down’, such as *telón* (curtain), *bomba* (bomb), *hoja* (leaf), *lluvia* (rain). On the other hand, these nouns need a verb in order to express different LFs meanings, such as ‘to fulfil the requirement of’ (which is the meaning of **Fact₀**), *caer el telón* (the curtain comes down); ‘to begin fulfilling the requirement of’ (which is the meaning of **IncepFact₀**), *caer las bombas* (the bombs fall); ‘empezar a degradarse’ (which is the meaning of **Degrad**), *caer las hojas* (the leafs fall); ‘existir’ (which is the meaning of **Func₀**), *caer la lluvia* (the rain comes down). In all these collocations *caer* preserves the meaning ‘to fall’. However, there are other nouns that select *caer* in order to express some particular LF meaning without the meaning ‘to fall’. That is the case of *caer enfermo* (to become ill), ‘to begin being

¹³ For phasal nouns it is possible to predicate ‘it begins P’, ‘it continues P’, ‘it finishes P’, where P is a fulfillment or support verb. About causative domain features, see that only the meanings ‘Y can provoke that X feels this emotion’ (**Caus₂Func₁** feature), and ‘there is an external or internal agent that can cause that this exist’, (**CausFunc₀** feature) were defined.

ill’ (which is the meaning of **IncepOper_i**), and *caer un imperio* (the empire crumbles), ‘to finish existing’ (which is the meaning of **FinFunc₀**).

This example shows how collocates can *select* and *be selected* at the same time: when collocates preserve their meaning, they select their arguments (‘fall’ selects what falls), and, at the same time, these arguments need a verb expressing some LF meaning and select this verb (‘curtain’ selects *fall*); when collocates do not preserve their meaning, they are selected by the base. Lack of space makes it difficult to mention other examples, but many of the verb entries in Bosque (2004, 2006) have similar properties.

As Apresjan claims, there are combinatory tendencies even in support verbs collocations. For instance, movement nouns usually combine with the verb *dar* (to give), as show *dar un paseo* (to walk)/ *una vuelta* (to go around something)/ *un giro* (turn)/ *un paso* (to take a step)/ *un brinco* (to jump)/ *un respingo* (to give a start)/ *un salto* (to jump)/ *una zancada* (stride), and with movement verbs related to driving a car, such as *dar un volantazo* (to swerve)/ *frenazo* (to slam on the brakes)/ *acelerón* (to put one’s foot down).

8 Conclusions

The *domain of the LF* is a concept of great interest since it makes it possible to work within the framework of MTT and, at the same time, to establish a link with Bosque’s approach. I have called *domain features* the semantic features shared by the keywords selected by each LF. The study of the domain of LFs and their domain features is based on the semantic motivation of those verbs which preserve their meaning, such as *caer* (fall), *cumplir* (fulfil), *obedecer* (obey); on the combinatory tendencies of semantically empty verbs such as *dar paseos* (go for a walk)/ *vueltas*, *giros* (turns)/ *saltos* (jumps); and also on verbs equivalent to keywords of support verbs.

There are values associated to the various LFs, so it was highly convenient to generate the inheritance of such values automatically, taking into account the LFs and using semantic labels. Thus, an extension of the *principle of lexical inheritance* (Mel’čuk and Wanner, 1996) was applied to the domains of LFs, and then the *generation of values by analogy* was defined. This extension of the principle allows two kinds of predictions: a) a given noun belongs to the domain of a LF; b) it has a certain value associated.

Fulfillment verb LFs need a thorough revision, because they express meanings that are not only related to lexis but also to semantics and pragmatics. Fulfillment domains verify that there is an objective feature that can be “expected” in a substantial amount of the collocations covered by these LFs. The problem lies on the fact that such feature varies in certain linguistic contexts due to extralinguistic reasons. Domain features of these nouns (Ls) were defined: ‘finality’ and ‘utility’ for concrete nouns, and ‘expectability’ for abstract nouns.

One key finding in support verbs is that among these LFs, **Func₀** differs semantically from **Oper** and **Labor**. The domain feature imposed by **Func₀** is ‘L exists by doing something in some way’, as in *cae la lluvia* (rain falls). However, **Oper** and **Labor** require their bases to be predicates usually having an equivalent verb. The feature domain that **Oper**, **Func_i** and **Labor** impose is an ‘action performed by somebody’, a ‘property that somebody has’ or a ‘situation that is experimented’.

Some situation nouns from the support verb domain (*esbozar una sonrisa*, to crack a smile; *lanzar una carcajada*, burst into laughter) and some situation nouns form the fulfillment verb domain (*arrancar un motor*, to start the engine; *prender la cerilla*, to light a match, *pararse el tren*, stop (the train)) belong to the phasal verbs domain. The domain features of phasal nouns of support verbs domain are the following: ‘it can last’ (nouns with this feature combine with *durar* (to last), ‘it takes place during/for’ (nouns with this feature combine with *durante* (during/for) and ‘it is punctual’ (for which there is an overlap between **IncepFunc₀** and **Func₀**). The presence or absence of each of these domain features was useful to distinguish *punctual nouns*, *lasting nouns*, *periods*, *states* and *processes*.

Situation and entity nouns also belong to the causative LFs domain, which is too wide to give a precise definition of its domain features. For **CausFunc₀**, **PermFunc₀** and **LiquFunc₀**, the feature ‘there is an internal or external agent that can make that exist’ was proposed, and for **Caus₂Func_i**, the feature ‘Y can make this affect X’.

The domain features of fulfillment and support verbs are semantic features, thus integrating with the Apresjan and Bosque theoretical evidences in favour of semantic motivation. The results of *BADELE.3000* show that it is possible to apply the *domain inheritance principle*, which is also based on semantic motivation. These data prove that there are some tendencies even in support verbs, and that collocatives can both select and be selected at the same time, that means that *selection* can be understood as a communicative process (MTT sense) or as a grammatical characteristic (Bosque's sense).

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