On the predictability of light verbs

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Abstract
In the two main frameworks studying light verb constructions (LVCs) in French, namely Lexicon-Grammar and DEC (*Dictionnaire Explicatif et Combinatoire*), the idiosyncratic nature of the light verb (LV) for a given predicative noun has been emphasized. In this paper, while acknowledging some idiosyncratic cases, we want to highlight the existence of a continuum between LVCs and ordinary constructions involving heavy verbs and, as a consequence, the partial predictability of the combination of a given LV with a predicative noun. We debate these issues with examples both in French and Persian.
Keywords: Light verb constructions, French, Persian, predictability

1. Introduction

Light verb constructions (LVCs) have been a focus of interest in several studies since mid 70's and early 80's for various reasons:

– Contrary to "prototypical" verbal constructions where the verb is the syntactic and semantic head of the sentence and its syntactic dependents are also its semantic arguments, in LVCs, one of the syntactic dependents of the verb, generally its direct object, functions as the semantic head, projecting its own argument structure, while the verb, which is semantically "light", bears only inflection and projects no argument structure.

– Given the fact that the verb has no semantic contribution or rather its semantic contribution is quite weak, it cannot be selected lexically, that is on the basis of its semantic contribution. The combination of a particular predicative noun (PN) with a particular light verb (LV) is thus a matter of idiosyncrasy: The noun and the verb form a collocation that must be stored in the lexicon.

These issues have been addressed for French in at least two large-scale lexicographic enterprises, namely Lexicon-Grammar and DEC (*Dictionnaire Explicatif et Combinatoire*), which are briefly introduced in Section 2. Both approaches underline the non-predictability of the light verb for a given predicative noun. The aim of our paper is to debate this non-predictability.

For achieving this goal, we shall study a set of LVCs in two languages, French and Persian, the latter interestingly displaying only roughly two hundred verbs. Any of these verbs is comparable to a light verb, at least to some extent (Section 3). More specifically, we shall investigate the continuum that can be drawn from light verbs to heavy (prototypical) verbs (Section 4), as well as the predictability of light verbs associated with neologisms (Section 5).

2 French light verbs in Lexicon-Grammar and DEC

The notion of light verb was first introduced in (Gross, 1976) to deal with nominalizations: the forms of the dependents of *agression* in (1a), in particular the preposition *contre* 'against' to introduce the second argument, cannot be derived from the verbal construction in (1b). On the other hand, the preposition *contre* 'against' is found in the LVC in (1c), which is, for M. Gross, the transformational source of the NP in (1b) through (1d).

(1) a. l'agression de Luc contre Marie (the attack of Luc against Mary)
    b. Luc a agressé Marie (Luc attacked Mary)
    c. Luc a commis une agression contre Marie (Luc committed an attack against Mary)
    d. l'agression que Luc a commise contre Marie (the attack Luc committed against Mary)

This first notion was furthermore extended in several directions, among which:
– The notion of "reverse verb": parallel to the paradigm in (1) with an active diathesis, there exists the paradigm in (2) with a passive diathesis in which *subir* 'suffer' is referred to as "reverse light verb". Note that the preposition *par* 'by' within the NP in (2c) is not found in the reverse LVC but in the passive verbal construction in (2a).

(2) a. Marie a été agressée par Luc (Mary was attacked by Luc)
    b. Marie a subi une agression de/de la part de Luc (Mary suffered an attack from Luc)
    c. l'agression de Marie par Luc (the attack of Mary by Luc)

– the notion of aspectual variant: parallel to the paradigm in (3), there exists the paradigm in (4) in which *prendre* 'take', *perdre* 'loose' and *garder* 'keep' are respectively referred to as inchoative, terminative and durative aspectual variants of the (aspectually neutral) light verb *avoir* 'have'.

(3) a. Luc a de l'influence sur Marie (Luc has some influence on Mary)
    b. l'influence de Luc sur Marie (the influence of Luc on Mary)
    c. Luc influence Marie (Luc influences Mary)

(4) a. Luc prend de l'influence sur Marie (Luc takes some influence on Mary)
    b. Luc perd son influence sur Marie (Luc loses his influence on Mary)
    c. Luc garde son/de l'influence sur Marie (Luc keeps some/his influence on Mary)

– the extension of these notions to predicative nouns which are not verbal nominalizations. The paradigms in (1)/(2) and (3)/(4) remain identical when replacing respectively *agression* 'attack' with *meurtre* 'murder' or *influence* 'influence' with *ascendant* 'ascendancy', except that the morphologically related verb doesn't exist.

Parallel to the work made by Maurice Gross and his colleagues, Igor Meľčuk and his colleagues introduced, in the framework of the *Dictionnaire Explicatoire et Combinatif (DEC)* (Meľčuk *et al.*, 1995), the lexical functions *Oper1* and *Oper2* which are respectively equivalent to the notions of light verb and reverse light verb. Aspectual variants of light verbs are represented by composition of lexical functions, for example *IncepOper1* for an inchoative variant. Moreover, DEC introduced lexical functions *Func1* and *Func2* for cases in which the nominalization or predicative noun occurs in the subject position (*Un cri a échappé à Luc* 'A cry escaped Luc', *Un tsunami a frappé le Japon* 'A tsunami hit Japan'). Such examples are discussed in (Danlos, 2010).

These two lexicographic enterprises, lexicon-grammar and DEC, are comparable[1] in that they agree on the fact that the semantic contribution of a light verb is quite weak: its contribution is limited to time and aspectual information (Gross, 1981)[2]. This (supposedly) weak semantic contribution (apparently) gives to light verbs a non-predictable (idiosyncratic) nature: lexicon-grammar and DEC defend the idea that, for each predicative noun, its light verbs (including its aspectual and diathetic variants) must be registered. This idiosyncratic nature is indeed visible when translating a LVC into another language (Danlos, 1992). For example, *prendre une décision* translates as *make a decision* and *faire une sieste* as *take a nap*. Nevertheless, it is clear that a large majority of French LVC whose light verb is *faire* translates as French LVC whose light verb is *make* (Danlos, 1993). So our position is more nuanced: we argue that it is necessary to make an inventory of lexicalized constructions (*prendre une décision, faire une sieste*) but that, on the other hand, there exist productive rules which allow us to predict the light verb (and its aspectual and diathetic variants) for a given predicative noun in a number of cases. This position will be defended in Section 4 for "speech nouns" and in Section 5 for neologisms. Beforehand, let us present the notion of complex predicate in Persian.

3. Light verbs and complex predicates in Persian

The number of simplex verbs in Persian can be estimated around 250.[3] Only a subset of these verbs, around 120, is currently used in today's Persian. The morphological formation process outputting verbs from nouns or adjectives, though available, is not productive. When they need to refer to a new event type, speakers resort to complex predicates (CPs), formed by a verb (in bold face) and a preverbal element (in italics), which can be a noun (5a), an adjective (5b), a preposition (or particle) (5c) or a prepositional phrase (5d) (Vahedi-Langrudi, 1996; Karimi, 1997; Karimi-Doostan, 1997; Megerdoomian, 2002; Goldberg, 2003; Folli et al., 2005; Samvelian, forthcoming):[4]

(5) a. Maryam bâ   Omid   *harf*   **zad**
       Maryam with Omid=DDO   talk   hit
       'Maryam talked to Omid.'
    b. Maryam dar=râ   *bâz*   **kard**
       Maryam door=DDO   open   did
       'Maryam opened the door.'
    c. Maryam ketâb=râ   *bar*   **dâšt**
       Maryam book=DDO   PART   had
       'Maryam took the book.'
    d. Maryam *be*   *xande* **oftâd**
       Maryam to   laugh   fell

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[1] However, they diverge in methodology. Lexicon-grammar progresses by light verbs, for example *faire* in (Giry-Schneider, 1978) and (Giry-Schneider, 1987), the pair *donner/recevoir* in (Gross, 1982), the triplet *avoir/prendre/perdre* in (Vivès, 1984). On the other hand, DEC progresses by predicative nouns. For a given predicative noun, the set of its lexical functions and so its light verbs are registered in its entry (Mel'cuk, 2004).

[2] Diathesis information should at least be added to the semantic contribution of light verbs.

[3] (Khanlari, 1986)'s estimation is 279. (Sadeghi, 1993) claims there are 252 verbs in Persian.

[4] In reality, there are verbs formed from nouns or adjectives, but they are mainly created by the Academy of Persian Language and Literature, which suggests and approves equivalents for the foreign general or technical terms. The verb *râyidan* 'compute', for instance, is a recent creation by the Academy. However, it should be noted that these creations, which are far less numerous than spontaneous creations, are not easily adopted by the native speakers, who almost systematically prefer using the complex predicate counterpart, which, for *râyidan* for instance, is *kampyut kardan* (lit. 'computation do').

'Maryam started laughing.'

About 30 of these verbs are used to form CPs. Two of them, kardan 'do' and šodan 'become' are always light verbs, the others have both light and lexical uses. Nouns used in CPs can either be concrete nouns (6a), abstract predicative nouns (6b) or so-called verbal nouns (6c):

(6) a. *dast zadan* 'touch' or 'applaud' (lit. 'hand hit')
    b. *dust dâštan* 'like, love' (lit. 'friend have')
    c. *fekr kardan* 'think' (lit. 'thought do')

One of the main consequences of the reduced number of verbs is the fact that many verbs are somehow light verbs, in that they are so polysemous that their meaning cannot be determined without their complements. Furthermore, in many cases, the light uses of a verb derive from its predicative uses by semantic drift or by analogy. In order to illustrate these points, let us consider one of the productive light verbs, which has also heavy uses, *zadan* 'hit'. The following examples illustrate two of its uses as a heavy verb:

(7) a. Maryam   Omid=râ   bâ   čâqu   zad
       Maryam   Omid=DDO with   knife   hit
       'Maryam hit Omid with a knife.'
    b. Maryam   rang=râ   be   divrâr zad
       Maryam   this painting=DDO to   wall   hit
       'Maryam applied this painting to the wall.'

In these examples, *zadan* means respectively 'hit' (or 'hit with') and 'apply'. The =*râ*-marked noun is then an ordinary complement and argument of the verb. Now consider (8):

(8) a. Maryam   Omid=râ   čâqu   zad
       Maryam   Omid=DDO knife   hit
       'Maryam stabbed Omid.'
    b. Maryam   divrâr=ra   rang   zad
       Maryam   wall=DDO   paint hit
       'Maryam painted the wall.'

In this second set of examples, the noun acting as a direct objet in (7), appears in a bare form and forms a CP with the verb. The noun-verb sequence behaves thus like a unique predicate and projects an arguments structure. Each sequence corresponds to a single verb ('stab' and 'hit').

To some extent, the verb *zadan* in (8) is comparable to a light verb: it does not project an argument structure alone, but it does so in conjunction with the preverbal nominal element. Though, on the other hand, these uses are also comparable to the lexical (or predicative) uses of *zadan* in (7), to the extent that *zadan* conserves its meaning. These examples illustrate the fact that there is no clearcut distinction between a light verb and a lexical verb in Persian. The fact the the verb conveys a meaning makes the new noun-verb combinations predictable. Thus, all predicates which means applying something on a surface or injury or harm are realized with *zadan*.

There are indeed examples of CPs where *zadan* seems to be semantically empty or light, but even in these cases it is generally possible to establish semantic groupings so that new combinations are formed according to the same pattern, as in the following examples:

(9) a. Maryam   be   Omid   telefon zad

Maryam   to   Omid   telefon   hit
'Maryam phoned Omid.'
b. Maryam   be   Omid   imeyl   zad
Maryam   to   Omid   e-mail   hit
'Maryam emailed Omid'/'Maryam sent an e-mail to Omid.'

On the basis of such examples, a parallel can be established between the formation of CPs in Persian and the convesion of nouns in verbs in languages such as French or English, the unique difference being the fact that in Persian there are more verbs used to form CPs than verb formation affixes in French, for instance.

4 From light verbs to heavy verbs

A fact that has been observed in different studies on LVCs is the semantic coherence of some classes of nouns combining with a specific or a set of LVs. For instance (Giry-Schneider, 1981) notes that nouns denoting a semiotic content (i.e., *noms de parole*) generally combine with the verb *dire* 'say'. One may assume that such regularities depend on the degree to which the LV has a specific semantic content. Indeed, dire is not a semantically vacuous verb and selects a conceptual class of objects. So the fact that the predicative nouns combining with dire display semantic coherence is not that surprising.

What's more intriguing is the fact that the semantic coherence is observed even with what could be considered as typical LVs, such as lancer 'throw' and glisser 'slide' in the following attested examples:

(10) a. Il *lance* une remarque sur la température dans les bureaux puis me tend une brochure.
b. Dans le silence, sa voix — si particulière, grave et rocailleuse — *lance* un commentaire acerbe

(11) a. Même le très sérieux FAZ qui avait analysé le phénomène « Astérix » lors de sa sortie en France dans un article intitulé Hollywood à la gauloise, *glisse* un compliment sur Gérard Depardieu : « Gérard Depardieu montre à nouveau son ventre rond et son talent pour la comédie dans le rôle d'Obélix ».
b. Un élégant gentleman *glisse* un commentaire : « Je sors de la messe, je suis venu directement voter. »

The LVs *lancer* and *glisser* are generally considered to be semantically vacuous, though they can combine with a semantically coherent class of nouns, roughly the same as those combining with *dire*. Moreover, once such LVs form lexicalized LVCs with semantically coherent classes of nouns, the speakers tend to assign them a semantic content. This can be shown by the attested examples in (12), in which the complement of *lancer* and *glisser* is not a predicative noun but a clause. Such examples shouldn't exist if these verbs were really semantically vacuous. Indeed, the fact that the clausal complement is interpreted here as the content of an utterance can only stem from the verbal interpretation. In other words, *lancer* and *glisser* behave in these examples as verbs of utterance in the same way as *dire*.

(12) a. Elle a dit ensuite qu'elle était très contente pour Marseille, puis, en chambrant un peu, elle a *lancé* que ça ne serait pas aussi bien qu'à Lille !
b. Au PS, qui a envoyé une délégation aux Antilles le week-end dernier, Dominique Paillé a *lancé* que cette démarche était « malvenue ».

(13) a. « Pauvre con va », *glisse* un Sarkozy vexé à un homme qui l'offense.
b. Un ami dessinateur lui *glisse* que les mangakas gagnent bien leur vie.

The same situation holds in Persian. First, there are coherent semantic classes of predicative nouns that combine with the same LV. The nouns denoting verbal communication and/or different types of shouts, for instance, generally combine with *zadan* 'hit', see *harf zadan* (*talk hit* 'talk') or *faryâd zadan* (*shout hit* 'shout'). There are of course some exceptions, for example the noun *sohbat* 'talk', synonymous to *harf*, does not combine with *zadan* but with *kardan* 'do'. The significant fact, however, is that we encounter attested examples of *sohbat zadan* (e.g., Bijankhan corpus, http://ece.ut.ac.ir/dbrg/Bijankhan/). We can decide to discard these neologisms, considering that they are performance mistakes. There is however another significant fact to mention here: we have not found any occurrences of *harf kardan*, although *kardan* is far more frequent as a light verb than *zadan*. So our conclusion is that although the speakers store all lexicalized combinations of LVCs, they also store more abstract knowledge about the most frequent combinations with a given semantic pattern or content. This is the reason why they extend the paradigm of *harf zadan* to *sohbat zadan*, but not the reverse. This explains also their capacity to creat new LVCs or to interpret LVCs that they have never encountered before.

Furthermore, as in French, LVs tend to be assigned a semantic content and begin functionning like heavy verbs, if they occur in a set of combinations with a regular semantic pattern. This point can be illustrated by combinations such as *pol zadan* 'build a bridge' (lit. *bridge hit*) and *tâq zadan* 'build a ceiling' (lit. *ceiling hit*), which are lexicalized CPs. The existence of a set of combinations in which the verb *zadan* can be interpreted as 'build' enables the speakers to assign a semantic content to *zadan* in these contexts and then to extend the set to other neologisms such as *sâxtemân zadan* 'build a building'. Although there are very few attested examples of this latter construction, its very existence confirms the fact that speakers interpret *zadan* as 'build' in all those combinations where the direct object denotes an object that can be built.

5 Light verb constructions involving neologisms

Another way to point out the continuum that ranges from heavy verbs to semantically empty verbs is to study light verb constructions involving neologisms as predicative nouns. This is because the very existence of such constructions would contradict purely lexical accounts of light verb selection, i.e., theories that would deny any generalizations on how a predicative noun may somehow select its light verb(s). Indeed, by definition, neologisms are not yet in any lexicon, and in particular they cannot lexically select any associated light verbs. This shows that nominal neologisms involved in light verb constructions use productive mechanisms for this purpose.

For unvailing these mechanisms, we carried out a corpus-based study for identifying light verb constructions in French whose predicative nouns are recent loan words. The reason why we restrict ourselves to loan words is that other types of neologisms (typically, resulting from derivational processes) might tend to mimic the behaviour of existing predicative nouns: it is not suprising that bioagression uses the same light verbs (e.g., *commettre* and *subir*) than *agression*. Since most recent loan words in French have English as a source language, we restricted our study to English.

In our experiments, we used the following practical definition of what a neologism is. First, we extracted from the GoogleBooks 1-grams[5] all tokens, considered here as inflected forms, that can be found at least once in books scanned by Google and published in the '90s. Second, we extracted all inflected forms from the Le*fff* lexicon (Sagot, 2010). We consider as

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[5] See http://ngrams.googlelabs.com/datasets

a candidate neologism any fully lowercase token that is unknown to one of these two inflected forms lists.

Building a high-quality large-scale corpus that contains enough occurrences of new loan words for finding them involved in light verb constructions is not as straightforward as it seems. We used the whole French Wikipedia, including discussion pages,[6] as well as the frWaC web-based corpus (Ferraresi *et al.*, 2010). The French Wikipedia being in Wikipedia raw format, we first turned it into a 441-million-token full-text corpus. Concerning the frWaC corpus, after processing it for dealing with various technical issues (such as encoding) we tokenized it into approximately 1.6 billion tokens. In the resulting 2 billion-token corpus, we looked for occurrences of the pattern *Vsup Det Npred*, where *Vsup* is any inflected form of one of 38 possible light verbs,[7] *Det* is a token that might be a determiner[8] and Npred is any candidate neologism as defined above.

Using this pattern, we extracted 27,666 unique sequences occurring at least twice, among which relevant sequences covering light verb constructions with a neologism as a predicative noun, non-relevant *Verb Det Noun* sequences for non-light verb constructions (e.g., the verb is a heavy verb) as well as many invalid sequences (e.g., sequences in which the noun is misspelled or sequences found in sentences written in other languages than French). Identifying relevant candidate sequences, and, among them, identifying those whose predicative noun is a loan word with English origin was achieved manually. This resulted in a list of 391 candidate light verb constructions involving 303 unique English loan words as candidate predicative nouns. Examples thereof include *faire un remix* 'remix', *effectuer un heal* 'heal (a video game character)', *porter un chokeslam* 'execute/deliver a chokeslam',[9] *donner une masterclass* 'give a masterclass', *effectuer un striptease* '(perform a) striptease', *avoir des flashbacks* 'experience flashbacks', *avoir un spin* '(have a) spin', *faire du trading* 'trade (as a financial instrument)'.

In order to understand whether and how the light verb selection process is driven by the predicative noun, we manually examined all 391 extracted LVCs in terms of semantic similarity with existing LVCs. It appears that each of the 391 LVCs can be considered analogous to at least one LVC that involves the same light verb and a semantically similar predicative noun (this latter notion being used here in an informal way). For example, *faire un remix* can be considered similar as *faire un arrangement, donner une masterclass* to *donner un cours*, or *faire du trading* to *faire du commerce*. In other words, neologisms appear in LVCs, but all such LVCs are analogous to previously existing ones. No idiosyncrasy is added to the language by LVCs whose predicative noun is a neologism. This is a strong argument in favor of the (partial) predictability of the light verb selection process.

6 Conclusions and perspectives

We have shown, using both examples from French and Persian, that a simple account of light verbs as semantically empty units overlooks the predictability of light verbs for several predicative nouns and does not account for at least two phenomena, namely the continuum that exists between light and heavy verbs and the productivity of light verb-predicative noun constructions. An example thereof is the verb *lancer*, which behaves as a traditional light verb

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[6] See http://dumps.wikimedia.org/frwiki/latest/frwiki-latest-pages-meta-current.xml.bz2

[7] The complete list is: *accorder, allonger, allouer, apporter, asséner, attribuer, avoir, bourrer, commettre, connaître, crépiter, distribuer, donner, décocher, déployer, effectuer, engager, faire, filer, flanquer, infliger, jeter, lancer, livrer, mener, mettre, nourrir, partager, perpétrer, porter, posséder, pousser, prendre, recevoir, ressentir, subir, émettre, éprouver*.

[8] Patterns of the form *Vsup Npred* have been tried as well (cf. *avoir peur (de)*, English *fear*), but preliminary experiments have shown that loan words do not appear in such patterns.

[9] A chokeslam is a type of throw in professional wrestling.

in constructions such as *lancer une plaisanterie* 'crack a joke', but that can also be used with a clausal complement (*lancer que P*) or be selected by neologisms as in *lancer un buzz*.

An interesting follow-up to this work would be to systematically study the behavior of nominal neologisms in Persian language, since the verbal lexicon in this language can only grow by creating new complex predicates involving verbal lexemes selected non-arbitrarily.

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