

Grammaticalization, host-class expansion and category change

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1 Introduction

Category change is at the heart of grammaticalization research. Grammaticalization comprises a diachronic process whereby a lexical expression starts to function as a grammatical marker (Meillet, 1912; Kuryłowicz, 1964; Hopper & Traugott, 2003). A typical example is the grammaticalization of the perfect auxiliary *have* out of a possessive lexical verb. In this grammaticalization process, the grammaticalizing element shifts its membership from an open lexical category to a closed grammatical category. Indeed, the possessive verb *have* is part of the large open class of full verbs whereas the perfect auxiliary belongs to the smaller closed class of auxiliary verbs. It is this type of category change, focusing on the shift of one element in category membership, that has been at center stage in grammaticalization research.

In the last decade, instigated by publications such as Traugott (2003) and Bybee (2003), there has been a growing interest in the wider context in which lexical expressions grammaticalize. Himmelmann (2004), inspired by earlier work of Bybee & Dahl (1989) and Bybee et al. (1994), argues that grammaticalization is essentially a process of context-extension at different levels. One type of extension, at the construction-internal level, is so-called host-class expansion, defined by Himmelmann (2004, p. 32) as expansion within “the class of elements the gram is in construction with”. Again, the grammaticalization of the perfect auxiliary *have* can serve as an example. Coussé (2014) shows that the grammaticalization of *have* in Dutch is accompanied by an extension of the past participles with which it collocates. In early Middle Dutch sources, the auxiliary typically occurs with past participles expressing change of possession. The range of past participles expands in later sources to new verb classes such as verbs of communication, possession and perception.

The goal of this article is to show that host-class expansion also constitutes a case of category change – one that has gone largely unnoticed in grammaticalization research. Host-class expansion can more specifically be regarded as a category-internal change in the open class of elements that a grammaticalizing element collocates with. The category change lies not in the shifting membership of an element from one category to another but rather in changes in the internal structure of a category as a whole. The claim that host-class expansion is category change gives rise to a couple of questions: How can we best describe the internal structure of this open class of elements? And how does the internal structure of this category change over time?

This article tackles these questions in section 2, making use of insights from construction grammar and prototype theory. This theoretical framework is then illustrated and substantiated by means of two pairs of well-described cases of host-class expansion accompanying grammaticalization. Section 3 more specifically discusses the grammaticalization of the *have* and *be* perfect auxiliaries in Dutch. Section 4 goes on to present host-class expansion in two binominal quantifier constructions in Spanish. The choice of these particular case studies is mainly based on practical grounds. They are among the few cases of host-class expansion that are extensively documented in quantitative diachronic corpus studies. Investigating two pairs of constructions has the advantage of examining host-class expansion both in very similar grammatical contexts, allowing for an in-depth contrastive perspective (section 3 and 4), and in rather different grammatical contexts, which invites us to make generalizations that go beyond one particular type of construction (section 5). The findings of the case studies are then summarized in section 5 and discussed in the light of the theoretical framework elaborated in section 2. Section 6 wraps up the article with a short conclusion.

2 Theoretical framework

This article draws mainly from insights from construction grammar and prototype theory, two areas of cognitive linguistics. Section 2.1 shows how a constructionist perspective can help us to define host-class expansion in a more precise way. Moreover, the framework demonstrates how host-class expansion can be considered a category change. Section 2.2 introduces prototype theory as a framework for further analyzing host-class expansion in terms of category change.

2.1 Construction grammar

Himmelmann (2004, p. 32) defines host-class expansion as expansion within “the class of elements the gram is in construction with”. This use of the term ‘construction’ is rather informal. Himmelmann (2004) makes use of the term both to refer to the wider context of a grammaticalizing element and to a sequence of elements. This article aims to provide a more precise definition of host-class expansion making use of the notion of ‘construction’ as defined in construction grammar (Langacker, 1987; Goldberg, 1995; Croft, 2001). As such, this article joins a recent trend in historical linguistics that articulates concepts from grammaticalization research with the help of the theoretical framework of construction grammar (Hilpert, 2008; Traugott, 2008a; Trousdale, 2008; Traugott & Trousdale, 2013). Host-class expansion has not to my knowledge been systematically addressed from such a constructionist perspective.

Construction grammar is a model of grammar that takes constructions as the basis of grammatical description. Constructions are symbolic pairings of meaning and form; as such, they are signs in the Saussurean sense of the word. They may differ with regard to their level of schematicity and

complexity. The constructions that are of direct relevance to grammaticalization and host-class expansion are so-called semi-schematic constructions, i.e. they contain at least one phonologically substantive element and one schematic position.¹ Take the grammaticalization of the perfect auxiliary *have*. This auxiliary cannot express perfect tense on its own but requires a past participle that expresses the anterior event. Together they form the perfect construction [*have* PART] – a semi-schematic construction with the phonologically substantive element ‘*have*’ and a schematic position ‘PART’ for past participles. It is this schematic position or ‘open slot’ in semi-schematic constructions that relates to the ‘host-class’ of Himmelmann (2004).

This open slot can be considered as a category. This claim builds on an insight from Radical Construction Grammar, a strand of construction grammar developed by Croft (2001), and has also been advanced by Bybee (2010). While all strands of construction grammar agree that the construction is the basic descriptive unit in grammar, there is controversy on the ontological status of categories. Generative grammar (including generative construction grammars such as Berkeley Construction Grammar and Sign-based Construction Grammar) assume categories to be fundamental units of language description. Croft (2001, p. 46) departs radically from this standpoint, stating that “Constructions, not categories and relations, are the basic, primitive units of syntactic representation”. Categories are thus defined by constructions rather than the other way round. Moreover, linguistic categories are not restricted to a handful of parts of speech but rather every class of elements that fills an open slot in a construction counts as a linguistic category in its own right. As such, the past participles that collocate with the perfect auxiliary *have* form a proper category collocationally restricted by the perfect construction. If we assume that the open class of elements associated with a grammaticalizing element is a full-fledged category defined by a construction, it follows that host-class expansion accompanying grammaticalization classifies as category-internal change.

2.2 Prototype theory

Now that we have established that the host-class of a grammaticalizing element can be described as a schematic category in a semi-schematic construction and host-class expansion as change inside this category, the question arises as to what this change looks like. This is not a trivial question. Are schematic positions just a class of elements defined by the construction, and that is all there is to say, or do they have an internal structure that can be further explored? This question is hardly addressed at all in construction grammar – which is baffling given the constant reference to open slots in constructionist approaches to grammar.

One of the hallmarks of cognitive linguistics is precisely that linguistic categories are considered to have internal structure (Lakoff, 1987; Langacker, 1987; Taylor, 1995). As opposed to classical approaches to categorization, going back to Aristotle, category membership is not only determined by the boundaries of a category; it is not just a matter of being inside or outside the category. In cognitive linguistics, category membership is a graded notion with some members

being more central or prototypical than others. This is the essence of what has become known as prototype theory. Let me first briefly introduce prototype theory before applying it to open slots in semi-schematic constructions. Geeraerts (1997, p. 11) summarizes the characteristics of prototypical categories as follows:

- (a) Prototypical categories exhibit degrees of typicality; not every member is equally representative for a category.
- (b) Prototypical categories exhibit a family resemblance structure, or more generally, their semantic structure takes the form of a radial set of clustered and overlapping readings.
- (c) Prototypical categories are blurred at the edges.
- (d) Prototypical categories cannot be defined by means of a single set of criterial (necessary and sufficient) attributes.

These characteristics may be briefly illustrated by the prototypical category ‘fruit’ – one of the natural categories originally studied by cognitive psychologists Rosch (1975) and Rosch & Mervis (1975) and a well-known example of prototypical categories ever since. Their psychological experiments show that human subjects classify referents like oranges, apples and bananas as the best representatives of the category fruit, whereas coconuts, tomatoes and olives are ranked as poor representatives. Thus, not all fruits are equally good representatives of the category. A poor example like tomatoes illustrates that the boundaries of the category are blurred or fuzzy: tomatoes are a fruit from a biological perspective but in western culinary tradition they are eaten as vegetables. This example also illustrates that there is no single set of criteria (e.g. biological status, culinary tradition, taste, texture) that is able to define the whole category of fruit. Rather, a prototypical fruit will have many of these criteria (apples are biologically a fruit, are eaten as a snack or dessert, have a sweet taste and a juicy texture) while a less prototypical referent will not share all these criteria.

Prototype theory was first successfully integrated in cognitive lexical semantics (Lakoff, 1987; Geeraerts, 1997). It was shown that meanings in words, just like referents in natural categories, can be described in terms of central and more peripheral members. This approach was later also extended to constructional semantics (Goldberg 1995). This is a straightforward extension if one takes into account that constructions are signs, just like words, with a meaning in their own right. This article further extends prototype theory to describe the internal structure of schematic categories defined by constructions. The category members to be described here are not related meanings expressed by the same word or construction, but rather the lexical elements that fill the open slot in a construction (for instance, the past participles that collocate with the perfect auxiliary *have*). The hypothesis is that the internal structure of these schematic categories is structured similarly to the meaning in words and constructions or the referents of natural categories.

This hypothesis has been explored by Bybee & Eddington (2006) and was elaborated further theoretically by Bybee (2010). Bybee & Eddington (2006) present a case study of the collocational preferences of four verbs of ‘becoming’ in Spanish used with an animate subject and an adjective. They argue that the majority of the adjectives collocating with each of these four verbs can be classified in semantically coherent categories with highly frequent exemplars at their center. As such, they propagate an exemplar model of categorization. Exemplar theory, first developed in cognitive psychology by Medin & Schaffer (1978), shows many similarities with prototype theory: categories are considered to have an internal structure, some category members may be more central than others, category boundaries are fuzzy. However, exemplar theory challenges the idea that categories are organized around a prototype that functions as an ‘ideal’ or ‘abstract’ representative of the category. Rather, categories are considered to consist of stored representations or so-called exemplars. Category membership is then determined on the basis of an item’s similarity to all these exemplars instead of one abstract prototype. Exemplar theory first found its way into linguistics for the representation of phonetic variation (Johnson, 1997; Pierrehumbert, 2001; 2002; Bybee, 2001) and was then propagated in the work of Bybee (Bybee, 2006; 2010; 2013; Bybee & Eddington, 2006) as a general mechanism of categorization in language.

The rejection of abstraction in the work on categorization by Bybee – most strongly articulated in Bybee (2010, p. 101-103) – is controversial in cognitive linguistics. While many cognitive linguists would agree that we store many details about individual instances of categories (i.e. the usage-based approaches of Langacker (1987), Taylor (1995), Barlow & Kemmer (2000), and Goldberg (2006)), schematization and abstractions are still considered an essential part of our language capacity. Goldberg (2006, p. 46) argues that exemplar theory does not do away with abstraction completely. She refers to the exemplar-based view of abstraction in cognitive psychology, which assumes that categorization is done using stored exemplars but also results in abstraction based on similarity that is stored as well. My standpoint is that this issue is an empirical falsifiable matter – as such echoing the words of Rosch (1975, p. 193): “The hypothesis that categories have an internal structure is not a theory which specifies, in advance of the collection of data, a precise model”. It should be kept in mind that the exemplar model for open slots has only been tested on the adjectives collocating with verbs of ‘becoming’ in Spanish. It remains to be seen whether other semi-schematic constructions show similar clustering effects around a frequent exemplar or not.

One additional issue that needs to be explored is how the internal structure of schematic categories changes over time. Again, my approach is to extend insights from cognitive lexical semantics to schematic categories defined by constructions. Geeraerts (1997) provides an authoritative overview of how semantic change in words can be accounted for in terms of prototype theory. One of his generalizations is particularly relevant for the study of host-class expansion. Geeraerts (1997, p. 23) states that “changes in the extension of a single sense of a lexical item are likely to take the form of an extension of the prototypical centre of that

extension”. He illustrates this tendency with the following abstract example. Take a word that names referents with the features ABCDE. A change in the referential range of the word implies a modulation of these features. A first layer of extensions may include referents with the features ABCD, BCDE, or ACDE. An additional layer of extension may involve features ABC, CDE, ACD and the like. Geeraerts (1997, p. 24) suggests that “the further the expansion extends, the fewer features the peripheral cases will have in common with the prototypical centre”.

It should be pointed out that this account is a so-called feature-list approach to category membership – a term suggested by Cruse & Croft (2004, p. 81-82), following Hampton (1997). Category membership in such an approach depends on the number of features an item has in common with the prototypical core of the category: central members share many of the features with the prototype and peripheral members only a few. This approach should be contrasted with the similarity-based approach illustrated earlier for Bybee & Eddington (2006). Geeraerts’ (1997) generalization may be extended to host-class expansion as follows. It is hypothesized that new items in a schematic category will be modulations of the prototypical core of the category. New members are expected to share fewer features with the core than the original members in the schematic category and will as a result be situated in the periphery of the category. Host-class expansion, in other words, is expected to proceed away from the prototypical core of the open slot.ⁱⁱ

3 Host-class expansion in the *have* and *be* perfect in Dutch

Now that the theoretical framework is in place, it is time to move on to the first case study of this article. This section takes a closer look at the grammaticalization of perfect auxiliaries. It is well-known that the grammaticalization of perfect auxiliaries is accompanied by an expansion of the past participles they collocate with. However, few studies present quantitative diachronic corpus data that allow us to examine this ongoing host-class expansion in more detail. Coussé (2014) is one of the exceptions to this rule. The study reports on the collocational preferences of perfect constructions found in the Compilation Corpus Historical Dutch (described in detail in Coussé 2010). The corpus contains legal texts (such as charters, statutes and contracts) dating from the middle of the 13th century until the end of the 18th century. The texts are systematically sampled from the chanceries of fifteen larger cities in three central dialect areas of the Low Countries, i.e. Flanders, Brabant and Holland. In total, 1344 *have* perfects and 499 *be* perfects were found in this material. Both perfect constructions are rather frequent throughout the investigated period 1250-1800, with an average relative frequency of 34.1 and 12.7 words per ten thousand words respectively (given a total corpus size of 393,957 words).ⁱⁱⁱ It should be noted that Coussé (2014) studies the *be* perfect alongside the *have* perfect, as both perfect constructions stand in an alternation relation with each other up to the present day in Dutch, a phenomenon that is known as ‘split auxiliary selection’.

The findings presented in Coussé (2014) allow us to scrutinize some of the hypotheses of the preceding section. In particular, the discussion section in Coussé (2014, p. 179-185) presents a seminal feature-list analysis of host-class expansion in the perfect that will be presented here first. The data in Coussé (2014) then also serve as the starting point for a new exemplar-based analysis of host-class expansion. As such, a considerable part of this section goes beyond the findings reported in Coussé (2014) and thus presents a new contribution to the diachronic study of the *have* and *be* perfect in Dutch. Let us first start with a summary of the feature-list analysis in Coussé (2014).

It was argued before that the past participles collocating with the auxiliary *have* can be considered an open slot in the semi-schematic construction [*have* PART]. The question now arises as to whether this schematic category has an internal structure that can be described in terms of prototype theory. Coussé (2014, p. 179-185) claims that this is the case, elaborating on the cognitive analysis of Shannon (1989; 1990; 1993a; 1993b; 1995) of split auxiliary selection. Shannon proposes that the choice between the auxiliaries *have* and *be* in the perfect is related to transitivity. He takes a prototypical perspective on transitivity, following Hopper & Thompson (1980, p. 252). This seminal work breaks down transitivity into ten correlating semantic-pragmatic parameters at the clause level pertaining to “a different facet of the effectiveness or intensity with which the action is transferred from one participant to another”. Actions or events involving many of these parameters are prototypical transitive events whereas events with fewer features are less prototypical transitive ones. Shannon now argues that the auxiliary *have* prefers prototypical transitive events (e.g. *hit, build, kill*) whereas its alternate *be* collocates with so-called prototypical mutative events (e.g. *come, fall, die*). Mutatives (also known as ‘unaccusatives’) have many features in common with prototypical transitives, except for the fact that they only involve one participant who is both the actor and undergoer of the event (to use the semantic macro-roles from Role and Reference Grammar). Coussé (2014, p. 184-185) casts this prototype account of split auxiliary selection in a constructionist framework, stating that the observed prototype effects should not be attributed to the perfect auxiliary in isolation but are best situated at the level of the perfect construction as a whole. In other words, it is the *have* perfect as a whole that has a collocational preference for prototypical transitive events, and, as such, defines these transitive events as a distinct category. Given the prototype structure of these transitive events, the open slot defined by the *have* perfect construction can be concluded to have a prototype structure. The same reasoning goes for the *be* perfect. It should however be pointed out that the category defined by the *be* perfect is much more restricted in size than that of the *have* perfect.

Now that we have established that the open slots in the *have* and *be* perfect exhibit a prototype structure, it is time to examine the hypothesis that host-class expansion within these slots proceeds away from their prototypical core. Coussé (2014, p. 166-179) presents diachronic corpus data that support this hypothesis. In the earliest corpus texts from the 13th century, the *have* perfect predominantly occurs with change-of-possession verbs (*geven* ‘give’, *krijgen* ‘get’,

vergeldden ‘pay’, *kopen* ‘buy’, *verkopen* ‘sell’, *ontvangen* ‘receive’, *huren* ‘rent’), whereas the *be* perfect is mainly used with change-of-location verbs (*komen* ‘come’) and change-of-state verbs (*worden* ‘become’, *lijden* ‘elapse’).^{iv} These verbs used in context exhibit many of the ten transitivity parameters of Hopper & Thompson (1980) and as such classify as prototypical transitive or prototypical mutative events. More recent corpus texts show that the *have* perfect expands its collocational range to verbs of communication (*verantwoorden* ‘reply’, *opbrengen* ‘declare’), possession (*bezitten* ‘own’, *houden* ‘hold’) and perception (*horen* ‘hear’, *bevinden* ‘observe’) and to transitive activity verbs (*useren* ‘practice’) in the course of time. The *be* perfect in turn expands to verbs of occurrence (*gebeuren* ‘occur’, *gevallen* ‘occur’) and verbs of continuation of a preexisting condition (*blijven* ‘remain’) and finally even to the existence-of-state verb *zijn* ‘be’. Coussé (2014) argues that these new verb classes increasingly exhibit fewer transitivity features and are therefore to be situated at the periphery of their respective categories. The gradualness of this extension is most clear in the *be* perfect, where each incoming verb class is lower in telicity – one of the ten defining parameters of transitivity. This observation bears out the prediction of Geeraerts (1997, p. 24) that for every layer of expansion the peripheral cases have fewer features in common with the prototypical core. In sum, the historical data for the *have* and *be* perfects show that host-class expansion proceeds away from a prototypical core.^v

This brings us to the question of why both perfect constructions start out with a preference for prototypical transitives or mutatives. Shannon (1995) does not offer an answer beyond relating the collocational preferences of both perfects to the gradient notions of transitivity/mutativity and their prototypical cognitive conceptualizations. Coussé (2014, p. 184-185) argues that the preferences for prototypical transitives/mutatives goes back to the original selectional restrictions of the particular resultative construction from which both perfects emerged. Resultatives in general express a state resulting from a previous event (Nedjalkov & Jaxontov 1988, p. 6). Coussé (2011, p. 615-621) argues that telic events affecting an undergoer participant are semantically consistent with this resultative constructional meaning. Recall that prototypical transitives and mutatives express precisely such telic change-of-state events. It should therefore come as no surprise that exactly these two event types occur in resultatives. The preference for prototypical transitives in early *have* perfects is related to the specific context in which the perfect readings emerged from their resultative sources. Coussé (2014) argues that *have* resultatives with a prototypical transitive participle may form a bridging context from a resultative to a perfect reading. These past participles have both an undergoer participant that is affected by the change-of-state event (required for a resultative reading) and an actor that can be interpreted as the subject of the clause (needed for a perfect reading). In this context, the resultative meaning, with a focus on the resultant state of the direct object, may give way to a perfect meaning, in which the past event performed by the subject is salient. The preference for prototypical mutatives in early *be* perfects likewise relates to the context in which the perfect reading emerged out of its resultative source. Coussé (2014) points out that the single argument of mutatives functions both as an undergoer of the change-of-state event (compatible with a resultative reading) and as the subject of the clause (compatible with a perfect reading).

The analysis in Coussé (2014) draws heavily on the feature-list prototype account presented in Shannon (1995) and Hopper & Thompson (1980). Let us now revisit parts of the data used in Coussé (2014) and examine whether it also supports a more exemplar-based account of schematic categories along the lines of Bybee & Eddington (2006).^{vi} Is it possible to discern, among the past participles in the *have* or *be* perfect, semantically coherent groups clustering around a frequent exemplar? The feature-list analysis above made extensive use of semantically defined verb classes (following Levin 1993 and Sorace 2000) such as change-of-possession verbs in the *have* perfect and change-of-location verbs in the *be* perfect. These verb classes do not have a special status in Coussé (2014) apart from being a way of structuring verbs in groups of more manageable sizes. In a more exemplar-based approach, these classes represent clusters of semantically related verbs. The question is now whether it is possible to find frequent exemplars that may act as the center of these verb classes.

The *be* perfect has only one potential candidate for such a frequent exemplar: the change-of-location verb *komen* ‘come’, which is used 107 times in a total of 499 *be* perfects. Other past participles have a much lower token frequency; most of them only occur a couple of times in the *be* perfect. Closer examination of the use of *komen* ‘come’ in the *be* perfect reveals that it is often part of larger formulaic expressions, or ‘prefabs’ as Bybee & Torres Cacoullos (2009) call them, illustrated in (1) and (2).

- (1) *Dat vore ons ende vore onse manne es comen ene edele joncfrowe onse liue nighte joncfrowe Sophye van mechlene* (Mechelen 1293)
‘that a noble lady, our dear relative Lady Sophie of Mechelen, has come before us and before our men’
- (2) *ende in dit erue es commen dese vornomde willem met manessen srechters ende met wiisdoeme der scepenen* (Mechelen 1293)
‘The aforementioned Willem has come into the possession of this property on demand of the judge and by verdict of the aldermen’

The prefab in (1) is used 31 times, predominantly in 14th-century charters from the region of Brabant, to announce that somebody has appeared in court. The formulaic expression in (2), found 16 times, mainly in 13th-century charters from Brabant, states that a piece of land or the tax rights on that land have come into the possession of somebody. Bybee (2010, p. 81) argues that prefabs represent conventional ways of expressing an idea and as such may form a frequent exemplar around which semantically similar items start to cluster. However, not much clustering can be observed around *komen* ‘come’ in the *be* perfect. There are only two other change-of-location verbs occurring in the *be* perfect (*gaan*, *varen* ‘go’) and they turn out to be used in very different contexts than the ones exemplified above.

The *have* perfect has many more frequent past participles which could potentially function as central exemplars. Most of these frequent verbs are change-of-possession verbs denoting some commercial transaction, as illustrated in (3) and (4).

- (3) *Wi maken v condegh dat dabt & conuent van Niniue hebben ghecoht terwet ene hofstat met allen gheleghen te Bochoute bouen hare hof ane de strate jeghen Hughen ende Segheren* (Velzeke 1257)
 ‘we make known that the abbot and the convent of Ninove have legally bought a farmhouse, situated in Bochoute next to their monastery in the street, from Hugo and Zeger’
- (4) *Ende ouer dese vorseide rente heuet hi ghegheven dien vorseiden hues ene hofstede die gheldet ix sol iarlijc* (Gent 1273)
 ‘and on top of this interest, he has given the aforementioned guesthouse a farmhouse that yields nine pounds yearly’

Figure 1 represents all change-of-possession verbs attested in the *have* perfect in the 13th century, together with their frequency. The large group of verbs can be divided into one cluster of verbs expressing buying events (to the left) and one cluster of verbs expressing selling events (to the right). These semantically coherent clusters relate to the well-known semantic frames ‘commerce_buy’ and ‘commerce_sell’ distinguished in frame semantics (Fillmore, 1975; 1985). Both frames represent a schematic commercial transaction scenario (involving a buyer, a seller, the exchange of goods or services, and the exchange of money) but they differ with respect to whether the buyer’s getting or the seller’s giving of the goods is profiled.

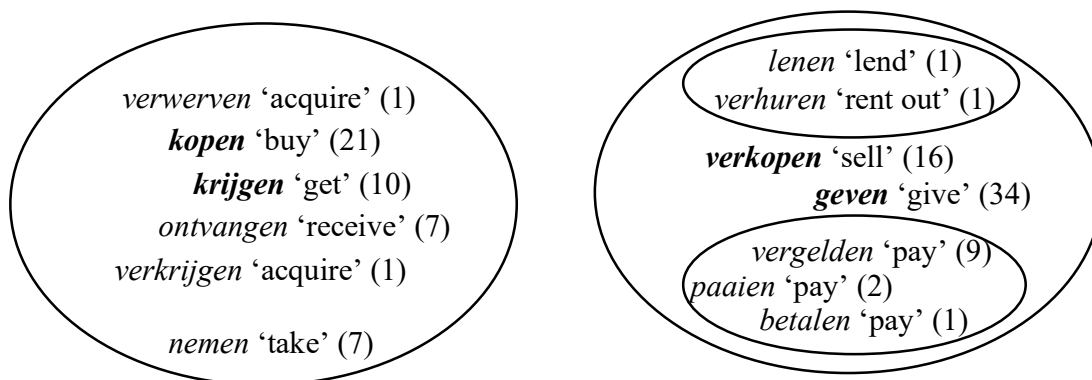


Figure 1. Verbs of buying and selling in the 13th century

Among the verbs of buying, both the frequent *kopen* ‘buy’ and *krijgen* ‘get’ may be considered to function as central exemplars (marked in bold face) given their high frequency and their semantic generality (cf. Bybee, 2010, p. 88). They are often used interchangeably, with *kopen* ‘buy’ expressing the buying event lexically and *geven* doing so by means of contextual cues, as in (4).

The less frequent verbs *verwerven* ‘acquire’, *ontvangen* ‘receive’ and *verkrijgen* ‘obtain’ are synonyms of both exemplars and are situated close to them in figure 1. The verb *nemen* ‘take’ is situated at the periphery of the cluster as it is used with a wider array of more general getting meanings. Similarly, the frequent *geven* ‘give’ and *verkopen* ‘sell’ may form central exemplars for the verbs of selling. However, the less frequent verbs of selling are not synonyms or near-synonyms of the more frequent verbs. Rather, they profile a specific part of the general selling frame. The verbs *vergeldden*, *paaien* and *betalen* ‘pay’ profile the exchange of money in the commerce transaction (also known as the commerce_pay subframe), whereas *lenen* ‘lend’ and *verhuren* ‘rent out’ profile the temporary nature of the exchange of goods typical for lending or renting out. These verbs can be argued to form subclusters that are in a semantic inclusion relation with the selling frame, represented by two diagrams with the larger diagram in figure 1.

The exploration of semantic verb clusters in the *have* and *be* perfect shows that verbs of selling and buying cluster around two pairs of frequent exemplars in the *have* perfect in the 13th century. No such exemplars could be found in *be* perfects of the same time. This finding suggests that not all schematic categories allow for a description in terms of the exemplar model.

4 Host-class expansion in two binominal quantifier constructions in Spanish

Let us now turn to the second case study of this article, the grammaticalization of quantifiers in the binominal construction [N1 of N2]. The development of binominal quantifier constructions has only recently started to draw the attention of grammaticalization researchers, often taking a constructionist perspective (Brems, 2003; 2010; 2011; Traugott, 2007; 2008a; 2008b; Traugott & Trousdale, 2013 for English and Verveckken, 2012; 2015; Delbecque & Verveckken, 2012 for Spanish).^{vii} The grammaticalization of quantifiers proceeds at the level of semi-schematic binominal constructions with a substantive N1 and a schematic position for N2 collocates. Take the grammaticalization of the size noun *bunch* in the English binominal construction [N1 of N2], as described by Brems (2011). In its lexical use, *bunch* functions as the N1 head of the binominal construction, denoting “a collection of things of the same kind, either growing together, or fastened closely together in any way” (Brems, 2010, p. 91 citing the OED). The collocational range of N2s modifying the N1 head *bunch* is limited to concrete objects that typically are tied together in bunches, like *a bunch of carrots, grapes, bananas, flowers, herbs, feathers, hair* and *keys*. The quantifier use of *bunch* (or rather *bunch of*) does not impose such strict selectional restrictions on its right collocates. Both concrete and abstract nouns are possible, as well as animates, as in the real-life examples *a bunch of suits, a whole bunch of studies, and a bunch of drunken, brain-dead louts* (Brems, 2010, p. 92-93).

Unfortunately, most of the studies of binominal quantifier constructions do not provide diachronic corpus data on the process of host-class expansion that presumably lies behind these collocational differences. Verveckken (2015) is a notable exception presenting exhaustive

quantitative corpus data on the collocates of the quantifying nouns from Medieval to Present-Day Spanish. This section discusses in detail her findings on the binominal quantifier constructions [*un aluvión de* N2] ‘a flood of N2’ and [*un montón de* N2] ‘a heap of N2’ – two semi-schematic constructions consisting of a substantive quantifier (*aluvión de* and *montón de* respectively) and an open slot for nouns.

Let us first examine whether the open slot in binominal quantifier constructions shows a prototype structure. The collocational data for *aluvión de* in Present-Day Spanish (period 1975-2004) points in this direction. Verveckken (2015, p. 336) shows that *aluvión de* mainly combines with five semantically coherent clusters: nouns denoting verbal reactions (*llamadas* ‘phone calls’, *críticas* ‘criticism’), human beings perceived as immigrants (*enfermos* ‘sick people’, *colonizadores* ‘colonizers’), information (*datos* ‘data’), political/economic actions or products (*productos* ‘products’, *dinero* ‘money’) and abstract nouns (*pensamiento* ‘thoughts’, *hermosura* ‘beauty’). This semantic clustering is reminiscent of the exemplar representation developed by Bybee & Eddington (2006). However, each of the N2 clusters consists of only two to five nouns, of which none can really be singled out as a frequent central exemplar in the cluster. Moreover, these items are not synonymous or near-synonymous, as is mostly the case in the clusters of Bybee & Eddington (2006). Verveckken (2015, p. 188-189) argues instead that all N2s are related to a joint conceptual image, i.e. they “are conceptualized as unstoppable, dynamic and antagonist forces directed towards one single victim or affected person”. Verveckken (2015, p. 303) refers with this conceptual image to the notions of frame (Fillmore, 1985) and image schema (Rhee, 2002; Oakley, 2007). She elaborates on its role in the grammaticalization of the binominal quantifiers in a way that is surprisingly consistent with the prototype account developed in the preceding sections.

Verveckken argues that the conceptual image imposed on the N2 collocates of *aluvión de* relates to its original frame: *aluvión* literally denotes a strong and violent flood of water, typically caused by heavy rainfall, and of a sudden character. The persistence of this conceptual image in its grammaticalized quantifier use is a gradient phenomenon. Verveckken (2012, p. 184) differentiates between high, medium and neutral conceptual image persistence. The three degrees of persistence depend on “whether the relation of the grammaticalized QN with its source frame is a metaphorical, a metonymic or simply an implicit one”. High conceptual image persistence in the quantifier use of *aluvión de* is argued to profile the entire set of conceptual facets metaphorically derived from its original image, i.e. “all at once”, “all of a sudden”, “uncontrollable” and “overwhelming”, as in (5). Medial conceptual image persistence in turn activates one or more conceptual facets which are metonymically related to the original frame, such as “different sources”, “unexpected”, “N2 is obtrusive/insistent” and “directed towards a single victim”, as in (6). Neutral conceptual image persistence only preserves a vague link with the original frame and profiles conceptual facets like “newness of N2” or “too many/much”.

(5) *Un aluvión de nuevos negocios, y nuevos empresarios, desconocidos meses atrás, parece inundar de repente la escena nacional, relegando a los políticos a las páginas interiores de los periódicos.*

‘A flood of new companies, and new businessmen, which only some months before were unknown, seem to suddenly inundate the national scene, relegating the politicians to the inside pages of the newspapers.’ (Verveckken, 2015, p. 314)

(6) *Cuando Mossén Ballarín (Barcelona, 1920) sale de los estudios de televisión donde ha sido entrevistado, un aluvión de personas se le acercan.*

‘When Mossén Ballarín (Barcelona, 1920) leaves the television studios where he has been interviewed, a flood of persons come to him.’ (Verveckken, 2015, p. 328)

The gradient notion of conceptual image persistence developed by Verveckken is consistent with the prototype account of schematic categories elaborated in this article. As mentioned before, the binominal quantifier construction [*un aluvión de N2*] is a semi-schematic construction with the substantive elements *aluvión de* expressing quantification and a schematic slot for nouns. This schematic slot can be assumed to have a graded internal structure reflecting different degrees of conceptual image persistence. Its prototypical core consists of a conceptual image that can be broken down in a number of conceptual facets metaphorically related to the original frame of *aluvión*. Some nouns elaborate all of these facets, leading to a high conceptual image persistence and prototypical category membership. Other nouns only elaborate certain conceptual facets or facets that are metonymically related to the source frame. These nouns are to be situated at the periphery of the schematic category. As with the perfect construction, the prototypical core of the schematic category has its roots in the selectional restrictions of the source construction. In the case of the binominal quantifier construction, the prototypical core consists of a conceptual image metaphorically linked to a rich conceptual frame evoked by a quantifying noun. The periphery of the category consists of metonymic and other extensions increasingly abstracting away from this conceptual image.

The question now is whether this synchronic prototype structure is the result of host-class expansion accompanying the grammaticalization of *aluvión de*. Verveckken (2015, p. 232) presents collocational data for *aluvión de* in Modern Spanish (period 1730-1900) and Early Present-Day Spanish (period 1900-1975). This allows us to track possible host-class expansion across three time periods. She distinguishes five semantic clusters of N2s in both time periods: invaders (*bárbaros* ‘Barbarian people’, *concurrentes* ‘contestants’), (parts of) discourse (*palabras* ‘words’, *novelas* ‘novels’), (unpleasant) reactions or answers (*censuras* ‘censure, condemnations’) and sensations (*pisadas* ‘footsteps’, *felicidades* ‘happiness’). These clusters overlap considerably with the five clusters discussed above for Present-Day Spanish (period 1975-2004). This stable collocational profile suggests that not much host-class expansion has taken place in the entire time period 1730 to 2004. Verveckken (2012, p. 408-409) relates a general lack of contextual expansion to high conceptual image persistence. Indeed, the N2

collocates of *aluvión de* exhibit 82% high, 15% medial and 3% neutral conceptual image persistence in Present-Day Spanish (1975-2004). This implies that the schematic category of nouns associated with the binominal quantifier *aluvión de* is focused on its prototypical core, with only a small periphery of extended uses. This focused usage may be motivated by the conceptual richness of the prototypical core, which in turn reflects the specific meaning of the source frame. Verveckken (2015, p. 475) suggests that conceptually rich quantifiers provide a creative tool for expressing hyperbolic quantification, and therefore are unlikely to entirely desemanticize.

The binominal quantifier construction [*un montón de N2*] provides an interesting contrast to [*un aluvión de N2*]. Collocational data from Present-Day Spanish (1975-2004) show that it is conceptually less focused than *aluvión de*. Verveckken (2012, p. 324, 374) indicates that some of the N2 collocates of *montón de* cluster around human entities, objects made of paper, time indications, sources of information, and money. Most right collocates, however, are semantically unrelated, but it is possible to discern a prototype structure among these collocates if we take the original frame of *montón de* into consideration. Verveckken (2012, p. 142) argues that all N2s have in common that they are conceptualized as being accumulated in one way or another. This conceptual image relates to the literal frame of *montón de* denoting entities heaped up by human endeavor. Indeed, as illustrated in (7), the right collocate *títulos* ‘academic titles’ is construed as having been accumulated one by one. The notion of accumulation is often further abstracted to denote for instance mere spatiotemporal contingency, as in (8), or lack of individuality or homogenization.

(7) *Piensa que tiene **un montón de títulos**, ya es académico de todo.*

‘He thinks he has a lot of titles, he is already academician in everything.’ (Verveckken, 2015, p. 348)

(8) *Una dama llevaba en la cabeza **un montón de estrellas plateadas** y se presentaba como la reina de los marcianos.*

‘A lady wore on the head a heap of silvered stars and presented herself as the queen of the Martians.’ (Verveckken, 2012, p. 317)

It should be clear that the collocates of *montón de* form a more abstract category than the collocates of *aluvión de*. Not only is the original frame of *montón de* conceptually more general than *aluvión de*, but the overall degree of conceptual image persistence with this frame is also much lower in *montón de*. Verveckken (2012, p. 409) indicates that *montón de* exhibits 23% high, 35% medial and 42% neutral conceptual image persistence. Let us now examine whether this low degree of conceptual image persistence can be related to host-class expansion. Verveckken (2012, p. 216) gives details of the collocates for quantifying *montón de* in Modern Spanish (1730-1900), grouping them into the following clusters: discourse, vegetation, corpses, manure or waste, earth and money. Only the cluster of nouns denoting money overlaps with the clusters distinguished earlier in Present-Day Spanish (1975-2004). Other clusters, such as

vegetation, corpses, manure or waste, and earth, rather overlap with the collocates of the head use of *montón de* in the same and earlier periods. This finding suggests that the collocational profile of quantifying *montón de* is more focused on its prototypical core in Modern Spanish and that extended uses are incorporated in the construction at a later stage.

5 Summary and discussion

The preceding sections discussed in detail two pairs of semi-schematic constructions with a grammaticalizing element and an open slot undergoing host-class expansion: the *have* and *be* perfect in Dutch and the binominal construction with the quantifiers *aluvión de* and *montón de* in Spanish. The main findings of these case studies are summarized here and discussed in the light of the research questions set out at the beginning of this article.

The case studies showed that the four open slots under investigation could be insightfully described as prototype categories. The internal structure of the class of collocates in the *have* and *be* perfect was analyzed by means of a feature-list prototype approach. The collocates in the binominal quantifier construction were described in terms of varying degrees of conceptual image persistence. These approaches are highly compatible. Both the feature-list approach and the conceptual image persistence account build on a semantic-conceptual core that can be broken down into a number of features or facets. The prototypical core in the perfect constructions is the semantic-conceptual concept of transitivity or mutativity which can be broken down into ten correlating transitivity parameters. The past participles in the open slot of the perfect share a varying number of these parameters determining their status as central or peripheral members of the category. The prototypical core of the binominal quantifier construction is a conceptual image (metaphorically related to the original meaning of the quantifier) which can be broken down into a number of conceptual facets. The N2 collocates profile these facets to varying degrees leading to a graded category membership of the open slot of the binominal quantifier construction at hand.

The prototypical core of all four open slots was traced back to the selectional restrictions and meaning of their source constructions. Given the different nature of the source constructions of the perfect and the binominal quantifier constructions, we arrived at semantic-conceptual prototypical cores of varying generality. The *have* and *be* perfect, on the one hand, both originated in resultative constructions which at the time had a relatively general meaning and considerable productivity. This precondition results in a rather general prototypical core for both perfects that could be defined in terms of transitivity. The binominal quantifier constructions under investigation, on the other hand, go back to a restricted set of N2s modifying one particular N1 head. The meaning of the N1 head was shown to persist in its grammaticalized use, giving rise to a rather specific prototypical core for the collocates of the binominal quantifier

constructions. This is particularly the case for *aluvión de*, of which the highly specific source frame leads to a conceptually rich prototypical core.

Host-class expansion in the open slots under investigation was shown to proceed away from the prototypical core. Historical corpus data revealed that new members in the open slots share fewer features with the prototypical core than original members. This finding bears out the hypothesis put forward in section 2 that changes in schematic categories constitute modulations of the prototypical core and that new members are situated at the category peripheries. The data also showed that the magnitude of expansion varied quite a lot between the *have* and *be* perfect and between the two binominal quantifier constructions at hand. The difference in expansion range between the two perfect constructions can be related to the fact that they are competing constructions that each started out with a distinct set of collocates. The initial collocates of the *have* perfect form a diverse set of transitive verbs belonging to different verb classes. This is less the case with the prototypical mutatives in the *be* perfect. The more equal distribution over verb classes in the *have* perfect may have spurred the overall generality and productivity of the construction, a point also suggested by Bybee & Torres Cacoullos (2009, p. 210-211). The difference in magnitude of expansion between the binominal quantifier constructions relates to the conceptual richness of the prototypical core. The conceptually rich core for *aluvión de* can be thought of as having a preserving effect on the potential collocates for the construction, whereas this is not the case with the general *montón de*.

As well as a graded internal structure, the open slots in the case studies also show semantic clustering. This finding raises the question of whether the internal structure in open constructional slots may be described in terms of exemplar theory, as argued in Bybee & Eddington (2006) and Bybee (2010). This article explored whether the collocates of the *have* and *be* perfect cluster in semantically coherent groups around a frequent exemplar. The *have* perfect did show evidence of such exemplar clustering, in particular around frequent verbs of selling and buying. The *be* perfect only had one frequent collocate that could serve as a potential central exemplar. It turned out that no semantic clustering could be observed around this verb. Also the semantic clusters in the binominal quantifier constructions did not show proof of exemplar categorization. It may thus be concluded that the exemplar categorization observed by Bybee & Eddington (2006) in Spanish, in particular for adjectives collocating with verbs of becoming, is not applicable to all open slots in semi-schematic constructions, or at least, not to the open slots of semi-schematic constructions with a lexical item that has undergone grammaticalization.

The semantic clusters observed, however, allow for another generalization that holds true for all open slots under investigation. It appeared that the collocates in open slots, if they cluster at all, tend to do so around conceptual frames. This was most elaborated for the binominal quantifier constructions but also surfaced in the discussion on the *have* perfect. Conceptual frames seem to form an intermediate level of abstraction between the meaning of lexical items and that of the schematic category.^{viii} Frames have likewise been argued to mediate between the meaning of

lexical items and the construction as a whole (Goldberg, 1995, p. 133-136; Israel, 1996, p. 220). These intricate levels of semantic abstraction can be visualized by means of the following taxonomy, adopting the notational conventions of cognitive grammar (Langacker, 1987; Tuggy, 2007).

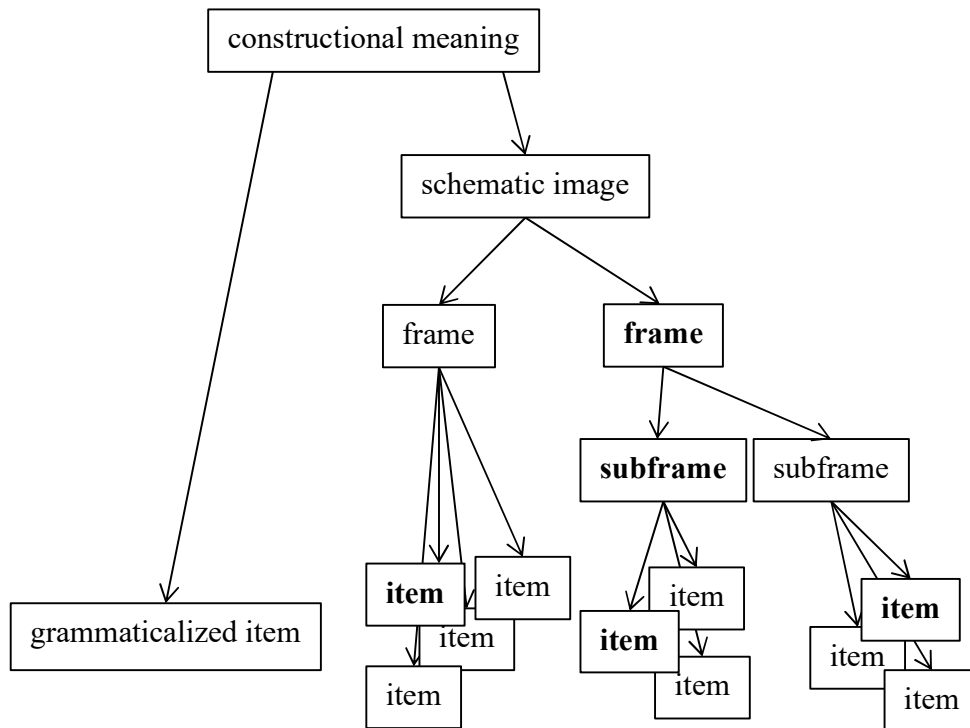


Figure 2. Levels of semantic abstraction in a semi-schematic construction

The lowest level of abstraction is that of the lexical item. It has a rich and complex lexical meaning exhibiting prototype structure (cf. section 2). The next level is that of the conceptual frame. It abstracts over a cluster of lexical items but still evokes rich and complex world and cultural knowledge. The analysis of the *have* perfect illustrated that frames may have different levels of granularity (recall that the *commerce_sell* frame encompasses for instance the *commerce_pay* subframe). Each frame in the taxonomy elaborates facets of the meaning of the schematic category, the next level of abstraction in the taxonomy, and the focus of this article. Its meaning is more abstract than that of the lexical item or conceptual frame but may show lexical persistence effects from the head use of the grammaticalized item. It has been argued in detail in this article that this level of semantic abstraction also shows prototype structure. The highest level of abstraction is that of the constructional meaning, which integrates the meaning of the grammaticalized item with that of the schematic category. Again, this level is known to exhibit prototype structure (cf. section 2). Figure 2 shows, in summary, that it is prototype structure all the way down.

6 Conclusion

It is time now to wrap up the main findings of this article. The central claim of this study is that the host-class expansion accompanying grammaticalization can be considered as category-internal change. The category at stake is the open slot in semi-schematic constructions where the phonologically substantive element(s) undergo(es) grammaticalization. It is argued that open slots can be considered as schematic categories that are collocationally delimited by the construction they are part of.

One of the aims of the article was to determine the internal structure of schematic categories. It was hypothesized that schematic categories defined by constructions – just like natural categories, lexical meaning and constructional meaning – have a prototype structure. Detailed analysis of the open slots in two pairs of semi-schematic constructions in Dutch and Spanish confirmed this expectation. It was shown that all open slots under investigation were organized around a semantic-conceptual core that could be broken down into a number of features or facets. The members of the schematic category elaborated these features to a varying degree, leading to a graded category membership. The prototypical core of each open slot was argued to go back to the selectional restrictions and meaning of the source construction.

Another aim of this article was to examine changes in the internal structure of open slots, or to put it in more traditional grammaticalization terminology, host-class expansion. It was expected that change in schematic categories – like change in lexical meaning and constructional meaning – would involve modulation of the prototypical core. The case studies of host-class expansion in Dutch and Spanish showed this to be the case. New members in the open slots of the constructions investigated appeared to share fewer features with the prototypical core than the original category members. The magnitude of expansion turned out to vary among the constructions under investigation depending, amongst other factors, on the conceptual richness of the prototypical core.

At this point, the question remains whether the prototype account presented in this article may be generalized to other schematic categories. My suggestion is that this depends on the constructional meaning of the semi-schematic construction at hand. The constructions discussed in this article have relatively rich meanings reflecting their origin in more lexical expressions. The conceptually rich constructional meaning was shown to be elaborated at different levels of abstraction, with the level of the schematic category closely related to that of the constructional meaning. A similar layered semantic structure may be expected in other semi-schematic constructions with a grammaticalized substantive item, given the fact that semantic persistence is typical of grammaticalization. There is, however, no intrinsic need to restrict the above prototype account to open slots associated with a grammaticalized item. Think only of the collocates of the *way*-construction, also argued to show prototype effects and host-class expansion by Israel (1996), without the presence of a grammaticalized element. It is left to future research to present

an integrated account of host-class expansion in semi-schematic constructions with and without a grammaticalized element.

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ⁱ Schematicity is used in cognitive linguistics to refer to any type of inclusion relation between a superordinate and a more specific concept (Tuggy, 2007, p. 83). The notion of schematic position or category is used in this article in a more restricted way to refer to an open slot in a construction that is filled with a range of phonologically specific items (cf. Croft, 2001, p. 15; Croft & Cruse, 2004, p. 255; Bybee, 2010, p. 76).

ⁱⁱ The prototype approach to host-class expansion may be elaborated even further. A reviewer suggests that in this framework even “the very nature of core and periphery is subject to change”. This is a very interesting idea that deserves further exploration. The focus of this article, however, is on first establishing the underlying prerequisite that the open class of elements associated with a grammaticalizing element is a prototype category and on exploring how expansion within such a category proceeds. The suggestion is therefore left for future research.

ⁱⁱⁱ More details on the corpus selection and data distribution can be found in Coussé (2014, p. 161-162).

^{iv} Note that some of these verbs are used in the corpus with a meaning that is unusual or even obsolete in Present-Day Dutch.

^v A reviewer remarks that the data suggest that “highly transitive events (e.g. *kill a person, hit a person, build a house*) did not occur in the *have* perfect construction as of its emergence”. This observation is correct and has two consequences. First, it strengthens the point of the next paragraph that transitivity features in themselves are not sufficient to explain the internal structure of the open slots in perfects; rather, they are epiphenomenal to the original selectional restrictions of their source constructions. Second, it suggests that the prototypical core of a schematic category itself may also be subject to change (see also footnote 2).

^{vi} The remainder of this section goes beyond the findings in Coussé (2014) and thus forms a new contribution.

^{vii} For reasons of space, the grammaticalization of other non-head uses of N1, such as the valuing-quantifying use (distinguished by Brems), the intensifying use (Traugott and Trousdale) and the premodifying use (Verveckken), is not discussed.

^{viii} The term schematization is avoided here since it might lead to confusion with the terms schematic position or category, as used in this article specifically to refer to open slots in constructions.