

types of negatives. This view allows negation to be realized in different grammatical categories, e.g., a morphological suffix, an auxiliary verb, or an adverbial expression. For instance, the negative *not* in English is taken to be an adverb like other negative expressions in English (e.g., *never*, *barely*, *hardly*). This view has been suggested by Jackendoff (1972), Baker (1991), Ernst (1992), Abeillé & Godard (1997), Kim (2000), and Warner (2000). In particular, Kim & Sag (1996), Abeillé & Godard (1997), Kim (2000), and Kim & Sag (2002) develop analyses of sentential negation in English, French, Korean, and Italian within the framework of HPSG, showing that the postulation of Neg and its projection NegP creates more empirical and theoretical problems than it solves (see Newmeyer 2006 for this point). In addition, there has been substantial work on negation in other languages within the HPSG framework, which does not resort to the postulation of functional projections or movement operations to account for the various distributional possibilities of negation (see Przepiórkowski & Kupść 1999; Borsley & Jones 2000; Przepiórkowski 2000; Kupść & Przepiórkowski 2002; de Swart & Sag 2002; Borsley & Jones 2005; Crowgey 2010; Bender & Lascarides 2013a).

This chapter reviews the HPSG analyses of these four main types of negation, focusing on the distributional possibilities of these four types of negatives in relation to other main constituents of the sentence. When necessary, the chapter also discusses implications for the theory of grammar.<sup>4</sup> It starts with the HPSG analyses of adverbial negatives in English and French, which have been most extensively studied in transformational grammars, and then moves to the discussion of morphological negatives, negative auxiliary verbs, and preverbal negatives. The chapter also reviews the HPSG analyses of phenomena like genitive negation and negative concord which are sensitive to the presence of negative expressions. The final section concludes this chapter.

## 2 Adverbial negative

### 2.1 Two key factors

The most extensively studied type of negation is the adverbial negative, which we find in English and French. There are two main factors that determine the position of an adverbial negative: the finiteness of the verb and its intrinsic properties, namely whether it is an auxiliary or a lexical verb (see Kim 2000: Chapter 3,

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<sup>4</sup>This chapter grows out of Kim (2000; 2018).

Kim & Sag 2002).<sup>5</sup>

First consider the finiteness of the lexical verb that affects the position of adverbial negatives in English and French. English shows us how the finiteness of a verb influences the surface position of the adverbial negative *not*:

- (2) a. Kim does not like Lee.  
b. \* Kim not likes Lee.  
c. \* Kim likes not Lee.
- (3) a. Kim is believed [not [to like Mary]].  
b. \* Kim is believed to [like not Mary].

As seen from the data above, the negation *not* precedes an infinitive verb, but cannot follow a finite lexical verb (see Baker 1989: Chapter 15, Baker 1991; Ernst 1992). French is not different in this respect. Finiteness also affects the distributional possibilities of the French negative *pas* (see Abeillé & Godard 1997; Kim & Sag 2002; Zeijlstra 2015):

- (4) a. Robin (n')aime pas Stacy.  
Robin ne.likes NEG Stacy  
'Robin does not like Stacy.'  
b. \* Robin ne pas aime Stacy.  
Robin ne NEG likes Stacy
- (5) a. Ne pas parler Français est un grand désavantage en ce cas.  
ne NEG to.speak French is a great disadvantage in this case  
'Not speaking French is a great disadvantage in this case.'  
b. \* Ne parler pas Français est un grand désavantage en ce cas.  
ne to.speak NEG French is a great disadvantage in this case

The data illustrate that the negator *pas* cannot precede a finite verb, but must follow it. But its placement with respect to the non-finite verb is the reverse image. The negator *pas* should precede an infinitive verb.

The second important factor that determines the position of adverbial negatives concerns the presence of an auxiliary or a lexical verb. Modern English

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<sup>5</sup>German also employs an adverbial negative *nicht*, which behaves quite differently from the negative in English and French. See Müller (2016: Section 11.7.1) for a detailed review of the previous theoretical analyses of German negation.

displays a clear example where this intrinsic property of the verb influences the position of the English negator *not*: the negator cannot follow a finite lexical verb, as in (6a), but when the finite verb is an auxiliary verb, this ordering is possible, as in (6b) and (6c).

- (6) a. \* Kim left not the town.
- b. Kim has not left the town.
- c. Kim is not leaving the town.

The placement of *pas* in French infinitival clauses is also affected by this intrinsic property of the verb (Kim & Sag 2002: 355):

- (7) a. Ne pas avoir de voiture dans cette ville rend la vie difficile.  
      ne NEG have a car in this city make the life difficult  
      ‘Not having a car in this city makes life difficult.’
- b. N’avoir pas de voiture dans cette ville rend la vie difficile.  
      ne.have NEG a car in this city make the life difficult  
      ‘Not having a car in this city makes life difficult.’
- (8) a. Ne pas être triste est une condition pour chanter des chansons.  
      ne NEG be sad is a condition for singing of songs  
      ‘Not being sad is a condition for singing songs.’
- b. N’être pas triste est une condition pour chanter des chansons.  
      ne.be NEG sad is a condition for singing of songs  
      ‘Not being sad is a condition for singing songs.’

The negator *pas* can either follow or precede an infinitive auxiliary verb, although the acceptability of the ordering in (7b) and (8b) is restricted to certain conservative varieties.

In capturing the distributional behavior of such adverbial negatives in English and French, as noted earlier, the derivational view (exemplified by Pollock 1989 and Chomsky 1991) has relied on the notion of verb movement and functional projections. The most appealing aspect of this view (initially at least) is that it can provide an analysis of the systematic variation between English and French. By simply assuming that the two languages have different scopes of verb movement – in English only auxiliary verbs move to a higher functional projection, whereas all French verbs undergo this process – the derivational view could explain why the French negator *pas* follows a finite verb, unlike the English negator *not*. In

order for this system to succeed, nontrivial complications are required in the basic components of the grammar, e.g., rather questionable subtheories (see Kim 2000: Chapter 3 and Kim & Sag 2002 for detailed discussion).

Meanwhile, the non-derivational, lexicalist analyses of HPSG license all surface structures by the system of phrase types and constraints. That is, the position of adverbial negatives is taken to be determined not by the respective properties of verb movement, but by their lexical properties, the morphosyntactic (finiteness) features of the verbal head, and independently motivated Linear Precedence (LP) constraints, as we will see in the following discussion.

## 2.2 Constituent negation

When English *not* negates an embedded constituent, it behaves much like the negative adverb *never*. The similarity between *not* and *never* is particularly clear in non-finite verbal constructions (participle, infinitival, and bare verb phrases), as illustrated in (9) and (10) (see Klima 1964; Kim 2000, Kim & Michaelis 2020: 199):

- (9) a. Kim regrets [never [having read the book]].  
b. We asked him [never [to try to read the book]].  
c. Duty made them [never [miss the weekly meeting]].
- (10) a. Kim regrets [not [having read the book]].  
b. We asked him [not [to try to read the book]].  
c. Duty made them [not [miss the weekly meeting]].

French *ne-pas* is no different in this regard. *Ne-pas* and certain other adverbs precede an infinitival VP:

- (11) a. [Ne pas [repeindre sa maison]] est une négligence.  
ne not paint one's house is a negligence  
'Not painting one's house is negligent.'  
b. [Régulièrement [repeindre sa maison]] est une nécessité.  
regularly to.paint one's house is a necessity  
'Regularly painting one's house is a necessity.'

To capture such distributional possibilities, Kim (2000) and Kim & Sag (2002) regard *not* and *ne-pas* as adverbs that modify non-finite VPs, not as heads of

their own functional projection as in the derivational view. The analyses view the lexical entries for *ne-pas* and *not* to include at least the information shown in (12).<sup>6</sup>

- (12) LOCAL values of *not* and *ne-pas*:
- $$\left[ \begin{array}{l} \text{CAT|HEAD} \left[ \begin{array}{l} \text{adv} \\ \text{MOD VP}[\text{nonfin}]:\boxed{1} \end{array} \right] \\ \text{CONT} \left[ \text{RESTR} \left\{ \left[ \begin{array}{l} \text{PRED } \textit{neg-rel} \\ \text{ARG1 } \boxed{1} \end{array} \right] \right\} \right] \end{array} \right]$$

The lexical information in (12) specifies that *not* and *ne-pas* modify a non-finite VP and that this modified VP serves as the semantic argument of the negation. This simple lexical specification correctly describes the distributional similarities between English *not* and French *ne-pas*, as seen from the structure in Figure 1.

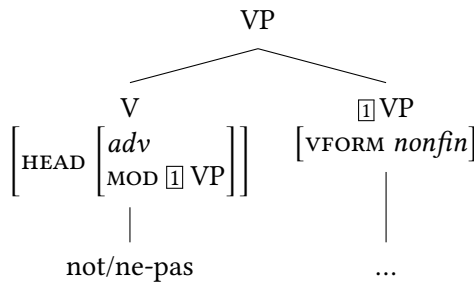


Figure 1: Structure of constituent negation

This structure implies that both *ne-pas* and *not* need to precede the VPs that they modify.<sup>7</sup> It also indicates that the negator does not separate an infinitival verb from its complements, as observed from the following data (Kim & Sag 2002: 356):

- (13) a. [Not [speaking English]] is a disadvantage.  
 b. \* [Speaking not English] is a disadvantage.

<sup>6</sup>Here we assume that both languages distinguish *fin(ite)* and *nonfin(ite)* verb forms, but that certain differences exist regarding lower levels of organization. For example, *prp* (*present participle*) is a subtype of *fin* in French, whereas it is a subtype of *nonfin* in English.

<sup>7</sup>This is constrained by the LP (linear precedence) Rule that specifies that a modifier precedes the head that it modifies.

- (14) a. [Ne pas [parler français]] est un grand désavantage  
           ne not           to.speak French is a       great  
           en               ce cas.  
           disadvantage in this case
- b. \* [Ne parler pas français] est un grand désavantage en ce cas.  
       ne to.speak not French is a great disadvantage in this case

Interacting with the LP constraints, the lexical specification in (12) ensures that the constituent negation precedes the VP it modifies. This predicts the grammaticality of (13a) and (14a), where *ne-pas* and *not* are used as VP[*nonfin*] modifiers. (13b) and (14b) are ungrammatical, since the modifier fails to appear in the required position – i.e., before all elements of the non-finite VP.

The HPSG analyses sketched here have recognized the fact that finiteness plays a crucial role in determining the distributional possibilities of negative adverbs. Its main explanatory capacity has basically come from the proper lexical specification of these negative adverbs. The lexical specification that *pas* and *not* both modify non-finite VPs has sufficed to predict their occurrences in non-finite environments.

### 2.3 Sentential negation

With respect to negation in finite clauses, there are important differences between English and French. As we have noted earlier, it is a general fact of French that *pas* must follow a finite verb, in which case the verb optionally bears negative morphology (*ne*-marking) (Kim & Sag 2002: 361):

- (15) a. Dominique (n')aime pas Alex.  
           Dominique ne.like NEG Alex  
           'Dominique does not like Alex.'
- b. \* Dominique pas aime Alex.  
       Dominique NEG like Alex

In English, *not* must follow a finite auxiliary verb, not a lexical (or main) verb:

- (16) a. Dominique does not like Alex.  
       b. \* Dominique not does like Alex.  
       c. \* Dominique likes not Alex.

In contrast to its distribution in non-finite clauses, the distribution of *not* in finite clauses concerns sentential negation. The need to distinguish between constituent and sentential negation can be observed from many grammatical environments, including scope possibilities that we can observe in an example like (17) (Klima 1964; Baker 1991; Warner 2000; Kim & Michaelis 2020: 200: see).<sup>8</sup>

- (17) The president could not approve the bill.

Negation here could have the two different scope readings paraphrased in the following:

- (18) a. It would be possible for the president not to approve the bill.  
b. It would not be possible for the president to approve the bill.

The first interpretation is constituent negation; the second is sentential negation. Another distinction comes from distributional possibilities. As noted, the sentential negation cannot modify a finite VP, different from the adverb *never*:

- (19) a. Lee never/\*not left. (cf. Lee did not leave.)  
b. Lee will never/not leave.

The contrast in these two sentences shows one clear difference between *never* and *not*: The negator *not* cannot precede a finite VP, though it can freely occur as a non-finite VP modifier, whereas *never* can appear in both positions.

Another key difference between *never* and *not* can be found in the VP ellipsis construction. Observe the following contrast (Kim & Sag 2002):

- (20) a. Mary sang a song, but Lee never could \_.  
b. \* Mary sang a song, but Lee could never \_.  
c. Mary sang a song, but Lee could not \_.

The data here indicate that *not* can appear after the VP ellipsis auxiliary, but this is not possible with *never*. The adverb *never* is a true diagnostic of a VP modifier, and we use these observed contrasts between *never* and *not* to reason about what the properties of the negator *not* must be.

We saw the lexical representation for constituent negation *not* in (12) above. Unlike the constituent negator, the sentential negator *not* typically follows a finite auxiliary verb. In this respect, *too*, *so*, and *indeed* also behave alike:

<sup>8</sup>Warner (2000) and Bender & Lascarides (2013b) discuss scopal interactions of negation with auxiliaries (modals) and quantifiers within the system of Minimal Recursion Semantics (MRS).

- (21) a. Kim will not read it.  
b. Kim will too/so/indeed read it.

These expressions are used to reaffirm the truth of the sentence in question and follow a finite auxiliary verb. This implies that the sentential *not* in English form a group of adverbs (which we call  $\text{Adv}_I$ ) that combine with a preceding auxiliary verb (see Kim 2000).

Noting the properties of *not* that we have discussed so far, the HPSG analyses of Abeillé & Godard (1997), Kim (2000), and Warner (2000) have taken this group of adverbs ( $\text{Adv}_I$ ) including the sentential negation *not* to function as the complement of a finite auxiliary verb via the following lexical rule:<sup>9</sup>

(22) Negative adverb-complement lexical rule:

$$\left[ \begin{array}{l} \textit{fin-aux} \\ \text{SYNSEM|LOC|CAT} \left[ \begin{array}{l} \text{HEAD} \left[ \begin{array}{l} \text{AUX} \quad + \\ \text{VFORM} \textit{fin} \end{array} \right] \\ \text{COMPS } \underline{1} \end{array} \right] \end{array} \right] \mapsto \left[ \begin{array}{l} \textit{neg-fin-aux} \\ \text{SYNSEM|LOC|CAT} \left[ \begin{array}{l} \text{HEAD} \left[ \begin{array}{l} \text{AUX} \quad + \\ \text{VFORM} \textit{fin} \end{array} \right] \\ \text{COMPS } \langle \text{Adv}_I \rangle \oplus \underline{1} \end{array} \right] \end{array} \right]$$

This lexical rule specifies that when the input is a finite auxiliary verb, the output is a neg-finite auxiliary ( $\textit{fin-aux} \mapsto \textit{neg-fin-aux}$ ) that selects  $\text{Adv}_I$  as an additional complement. This would then license a structure like in Figure 2.

As shown in Figure 2, the negative finite auxiliary verb *could* combines with two complements, the negator *not* ( $\text{Adv}_I$ ) and the VP *approve the bill*. This combination results in a well-formed head-complement construct. By treating *not* as both a modifier (constituent negation) and a lexical complement of a finite auxiliary (sentential negation), we thus can account for the scope differences in (17) with the following two possible structures:

- (23) a. The president could [not [approve the bill]].  
b. The president [could] [not] [approve the bill].

In (23a), *not* functions as a modifier to the base VP, while in (23b), whose partial structure is given in Figure 2, it is a sentential negation serving as the complement of *could*.

<sup>9</sup>The symbol  $\oplus$  stands for the function *append*, i.e., a relation that concatenates two lists.



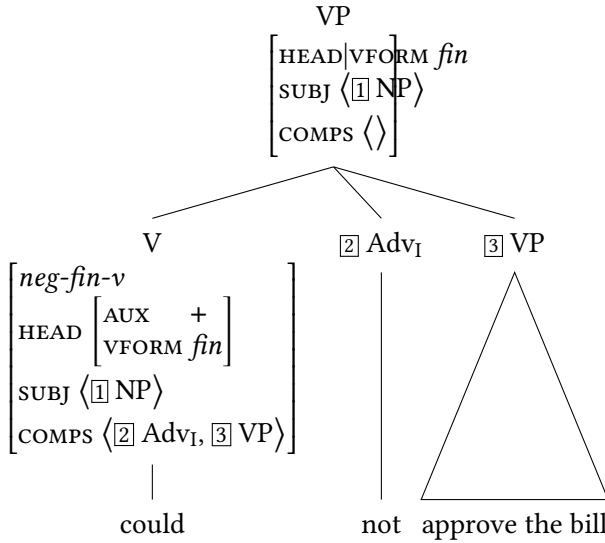


Figure 2: Structure of sentential negation

The present analysis allows us to have a simple account for other related phenomena, including the VP ellipsis discussed in (20). The key point was that, unlike *never*, the sentential negation can host a VP ellipsis. The VP ellipsis after *not* is possible, given that any VP complement of an auxiliary verb can be unexpressed, as specified by the following lexical rule (Kim 2000; Kim & Michaelis 2020: 209):

(24) Predicate ellipsis lexical rule:

$$\left[ \begin{array}{l} aux-v-lxm \\ \text{ARG-ST } \langle [1] \text{ XP}, [2] \text{ YP} \rangle \end{array} \right] \mapsto \left[ \begin{array}{l} aux-ellipsis-wd \\ \text{COMPS } \langle \rangle \\ \text{ARG-ST } \langle [1] \text{ XP}, [2] \text{ YP}[pro] \rangle \end{array} \right]$$

What the rule in (24) tells us is that an auxiliary verb selecting two arguments can be projected into an elided auxiliary verb (*aux-ellipsis-wd*) whose second argument is realized as a small *pro*, which in definition behaves like a slashed expression not mapping into the syntactic grammatical function COMPS. This analysis would then license the structure in Figure 3.

As represented in Figure 3, the auxiliary verb *could* forms a well-formed head-complement construct with *not*, while its VP[bse] is unrealized (see Kim 2000; Kim & Sells 2008 for detail). The sentential negator *not* can “survive” VP ellipsis

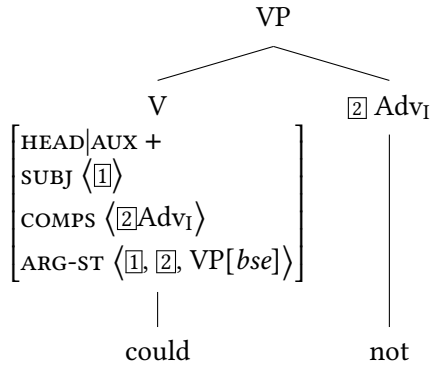


Figure 3: A licensed VP ellipsis structure

because it can be licensed in the syntax as the complement of an auxiliary, independent of the following VP. However, an adverb like *never* is only licensed as a modifier of VP. Thus if the VP were elided, we would have the hypothetical structure like the one in Figure 4: the adverb *never* modifies a VP through

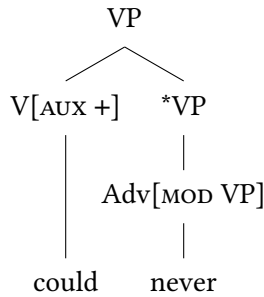


Figure 4: Ill-formed structure of the head-mod construction

the feature MOD, which guarantees that the adverb requires the head VP that it modifies. In an ellipsis structure, the absence of such a VP means that there is no VP for the adverb to modify. In other words, there is no rule licensing such a combination – predicting the ungrammaticality of *\*has never*, as opposed to *has not*.

The HPSG analysis just sketched here can be easily extended to French negation, whose data we repeat here.

- (25) a. \* Robin ne pas aime Stacy.  
         Robin ne NEG likes Stacy  
         ‘Robin does not like Stacy.’  
       b. Robin (n’)aime pas Stacy.  
         Robin ne.likes NEG Stacy  
         ‘Robin does not like Stacy.’

Unlike the English negator *not*, *pas* must follow a finite verb. Such a distributional contrast has motivated verb movement analyses, as mentioned above (see Pollock 1989; Zanuttini 2001). By contrast, the present HPSG analysis is cast in terms of a lexical rule that maps a finite verb into a verb with a certain adverb like *pas* as an additional complement. The idea of converting modifiers in French into complements has been independently proposed by Miller (1992) and Abeillé & Godard (1994) for French adverbs including *pas*. Building upon this previous work, Abeillé & Godard (1997) and Kim (2000) allow the adverb *pas* to function as a syntactic complement of a finite verb in French.<sup>10</sup> This output verb *neg-fin-v* then allows the negator *pas* to function as the complement of the verb *n’aime*, as represented in Figure 5.

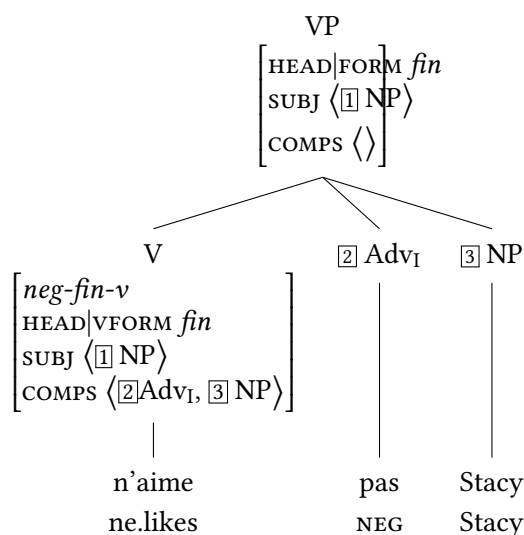


Figure 5: Partial structure of (25b)

<sup>10</sup>Following Abeillé & Godard (1994), we could assume *ne* to be an inflectional affix which can be optionally realized in the output of the lexical rule in Modern French.

The analysis also explains the position of *pas* in finite clauses. The placement of *pas* before a finite verb in (25a) is unacceptable, since *pas* here is used not as a non-finite VP modifier, but as a finite VP modifier. But due to the present analysis which allows *pas*-type negative adverbs to serve as the complement of a finite verb, *pas* in (25b) can be the sister of the finite verb *n'aime*.

Given that the conditional, imperative, subjunctive, and even present participle verb forms in French are finite, we can expect that *pas* cannot precede any of these verb forms, which the following examples confirm (Kim 2000: 142):

- (26) a. Si j'avais de l'argent, je n'achèterais pas de voiture.  
if I.had of money I ne.buy NEG a car  
'If I had money, I would not buy a car.'
- b. \* Si j'avais de l'argent, je ne pas achèterais de voiture.  
if I.had of money I ne NEG buy a car
- (27) a. Ne mange pas ta soupe.  
ne eat NEG your soup  
'Don't eat your soup!'
- b. \* Ne pas mange ta soupe.  
ne NEG eat your soup
- (28) a. Il est important que vous ne répondiez pas.  
it is important that you ne answer NEG  
'It is important that you not answer.'
- b. \* Il est important que vous ne pas répondiez.  
it is important that you ne NEG answer
- (29) a. Ne parlant pas Français, Stacy avait des difficultés.  
ne speaking NEG French Stacy had of difficulties  
'Not speaking French, Stacy had difficulties.'
- b. \* Ne pas parlant Français, Stacy avait des difficultés.  
ne NEG speaking French Stacy had of difficulties

Note that this non-derivational analysis reduces the differences between French and English negation to a matter of lexical properties. The negators *not* and *pas* are identical in that they both are VP[*nonfin*]-modifying adverbs. But they are

different with respect to which verbs can select them as complements: *not* can be the complement of a finite auxiliary verb, whereas *pas* can be the complement of any finite verb. So the only difference between *not* and *pas* is the morphosyntactic value [AUX +], and this induces the difference in positioning the negators in English and French.

### 3 Morphological negative

As noted earlier, languages like Turkish and Japanese employ morphological negation where the negative marker behaves like a suffix (Kelepir 2001: 171 for Turkish and Kato 1997; 2000 for Japanese). Consider a Turkish and a Japanese example respectively:

- (30) a. Git-me-yeceğ-Ø-im  
           go-NEG-FUT-COP-1SG  
           ‘I will not come.’  
       b. kare-wa kinoo      kuruma-de ko-na-katta.  
           he-TOP yesterday car-INST come-NEG-PST  
           ‘He did not come by car yesterday.’

As shown by the examples, the sentential negation of Turkish and Japanese employ morphological suffixes *-me* and *-na*, respectively. It is possible to state the ordering of these morphological negative markers in configurational terms by assigning an independent syntactic status to them. But it is too strong a claim to take the negative suffix *-me* or *-na* to be an independent syntactic element, and to attribute its positional possibilities to syntactic constraints such as verb movement and other configurational notions. In these languages, the negative affix acts just like other verbal inflections in numerous respects. The morphological status of these negative markers comes from their morphophonemic alternation. For example, the vowel of the Turkish negative suffix *-me* shifts from open to closed when followed by the future suffix, as in *gel-mi-yece* ‘come-NEG-FUT’. Their strictly fixed position also indicates their morphological constituenthood. Though these languages allow a rather free permutation of syntactic elements (scrambling), there exist strict ordering restrictions among verbal suffixes including the negative suffix, as observed from the following:

- (31) a. tabe-sase-na-i/\*tabe-na-sase-i  
           eat-CAUS-NEG-NPST/eat-NEG-CAUS-NPST

- b. *tabe-rare-na-katta*/\**tabe-na-rare-katta*  
 eat-PASS-NEG-PST/eat-NEG-PASS-PST
- c. *tabe-sase-rare-na-katta*/\**tabe-sase-na-rare-katta*  
 eat-CAUS-PASS-NEG-PST/eat-CAUS-NEG-PASS-PST

The strict ordering of the negative affix here is a matter of morphology. If it were a syntactic concern, then the question would arise as to why there is an obvious contrast in the ordering principles of morphological and syntactic constituents, i.e., why the ordering rules of morphology are distinct from the ordering rules of syntax. The simplest explanation for this contrast is to accept the view that morphological constituents including the negative marker are formed in the lexical component and hence have no syntactic status (see Kim 2000: Chapter 2 for detailed discussion).

This being noted, it is more reasonable to assume that the placement of a negative affix is regulated by morphological principles, i.e., by the properties of the morphological negative affix itself. The process of adding a negative morpheme to a lexeme can be modeled straightforwardly by a lexical rule given in the following (see Kim 2000; Crowgey 2012):

(32) Negative word formation lexical rule:

$$\left[ \begin{array}{l} v\text{-}lxm \\ \text{PHON } \langle [1] \rangle \\ \text{SYNSEM|LOC|CONT } [2] \end{array} \right] \mapsto \left[ \begin{array}{l} neg\text{-}v\text{-}lxm \\ \text{PHON } \langle F_{neg}([1]) \rangle \\ \text{SYNSEM|LOC } \left[ \begin{array}{l} \text{CAT|HEAD|POL } neg \\ \text{CONT|RESTR } \left\{ \left[ \begin{array}{l} \text{PRED } neg\text{-}rel \\ \text{ARG1 } [2] \end{array} \right] \right\} \end{array} \right] \end{array} \right]$$

As shown here, any verb lexeme can be turned into a verb with the negative morpheme attached. That is, the language-particular definition for  $F_{neg}$  will ensure that an appropriate negative morpheme is attached to the lexeme. For instance, the suffix *-ma* for Turkish and *-na* for Japanese will be attached to the verb lexeme, generating the verb forms in (30a).<sup>11</sup>

This morphological analysis can be extended to the negation of languages like Libyan Arabic, as discussed in Borsley & Krer (2012). The language has a bipartite realization of negation, the proclitic *ma-* and the enclitic *-š*:

<sup>11</sup>In a similar manner, Przepiórkowski & Kupś (1999) and Przepiórkowski (2000; 2001) discuss aspects of Polish negation, which is realized as the prefix *nie* to a verbal expression.

- (33) la-wlaad ma-mšuu-š                      li-l-madrsa.  
 the-boys NEG-go.PST.3.PL-NEG to-the-school  
 ‘The boys didn’t go to the school.’

As Borsley & Krer (2012) did, we can take these clitics as affixes and generate a negative word. Given that the function  $f_{neg}$  in Libyan Arabic allows the attachment of the negative prefix *ma-* and the suffix *-š* to the verb stem *mšuu*, we would have the following output in accordance with the lexical rule in (32).<sup>12</sup>

$$(34) \left[ \begin{array}{l} neg-v-lxm \\ PHON \langle ma-mšuu-š \rangle \\ SYNSEM|LOC \left[ \begin{array}{l} CAT|HEAD|POL \ neg \\ CONT|RESTR \left\{ \left[ \begin{array}{l} PRED \ neg-rel \\ ARG1 \ 2 \end{array} \right] \right\} \end{array} \right] \end{array} \right]$$

The lexicalist HPSG analyses sketched here have been built upon the thesis that autonomous (i.e., non-syntactic) principles govern the distribution of morphological elements (Bresnan & Mchombo 1991). The position of the morphological negation is simply defined in relation to the verb stem it attaches to. There are no syntactic operations such as head-movement or multiple functional projections in forming a verb with the negative marker.<sup>13</sup>

## 4 Negative auxiliary verb

Another way of expressing sentential negation, as noted earlier, is to employ a negative auxiliary verb. Some head-final languages like Korean and Hindi employ negative auxiliary verbs. Consider a Korean example:

- (35) John-un ku chayk-ul ilk-ci                      anh-ass-ta.  
 John-TOP that book-ACC read-CONN NEG-PST-DECL  
 ‘John did not read the book.’

The negative auxiliary in head-final languages like Korean typically appears clause-finally, following the invariant form of the lexical verb. In head-initial

<sup>12</sup>Borsley & Krer (2012) note that the suffix *-š* is not realized when a negative clause includes an *n*-word or an NPI (negative polarity item). See Borsley & Krer (2012) for further details.

<sup>13</sup>The lexical-rule-based approach here can be extended to a construction-based HPSG approach or a constructionist approach. See Sag (2012) and Hilpert (2016) for a construction-based approach to morphological processes.

SVO languages, however, the negative auxiliary almost invariably occurs immediately before the lexical verb (Payne 1985). Finnish also exhibits this property (Mitchell 1991):

- (36) Minä e-n puhu-isi.  
I.NOM NEG-1SG speak-COND  
'I would not speak.'

These negative auxiliaries have syntactic status: they can be inflected, above all. Like other verbs, they can also be marked with verbal inflections such as agreement, tense, and mood.

In dealing with auxiliary negative constructions, most of the derivational approaches have followed Pollock's and Chomsky's analyses in factoring out grammatical information (such as tense, agreement, and mood) carried by lexical items into various different phrase-structure nodes (see, among others, Hagstrom 2002, Han et al. 2007 for Korean, and Vasishth 2000 for Hindi). This derivational view has been appealing in that the configurational structure for English-type languages could be applied even for languages with different types of negation. However, issues arise about how to address the grammatical properties of auxiliary negatives, which are quite different from the other negative forms.

The Korean negative auxiliary displays all the key properties of auxiliary verbs in the language. For instance, both the canonical auxiliary verbs and the negative auxiliary alike require the preceding lexical verb to be marked with a specific verb form (VFORM), as illustrated in the following:

- (37) a. ilk-ko/\*-ci siph-ta.  
read-CONN/CONN would.like-DECL  
'(I) would like to read.'  
b. ilk-ci anh-ass-ta.  
read-CONN NEG-PST-DECL  
'(I) did not read.'

The auxiliary verb *siph-* in (37a) requires a *-ko*-marked lexical verb, while the negative auxiliary verb *anh-* in (37b) asks for a *-ci*-marked lexical verb. This shows that the negative is also an auxiliary verb in the language.

In terms of syntactic structure, there are two possible analyses. One is to assume that the negative auxiliary takes a VP complement and the other is to claim that it forms a verb complex with an immediately preceding lexical verb, as represented in Figures 6a and 6b, respectively (Chung 1998a; Kim 2016).



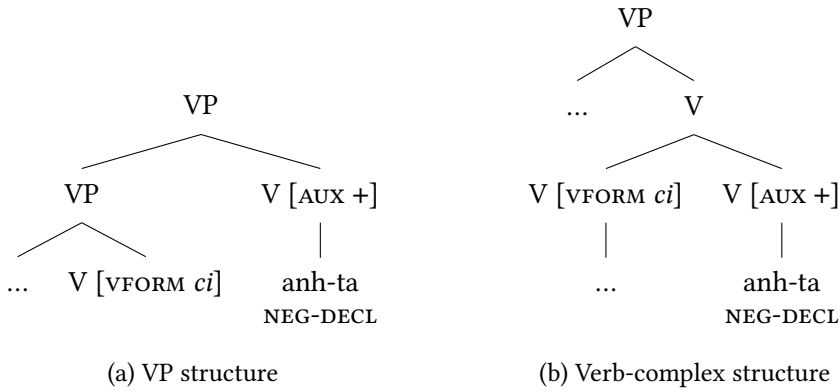


Figure 6: Two possible structures with the negative auxiliary

The distributional properties of the negative auxiliary in the language, however, support a complex predicate structure (cf. Figure 6b) in which the negative auxiliary verb forms a syntactic/semantic unit with the preceding lexical verb. For instance, no adverbial expression, including a parenthetical adverb, can intervene between the main and the auxiliary verb, as illustrated by the following:

- (38) Mimi-nun (yehathun) tosi-lul (yehathun) ttena-ci (\*yehathun)  
 Mimi-TOP anyway city-ACC anyway leave-CONN anyway  
 anh-ass-ta.  
 NEG-PST-DECL  
 ‘Anyway, Mimi didn’t leave the city.’

Further, in an elliptical construction, the elements of a verb complex always occur together. Neither the lexical verb nor the auxiliary verb alone can serve as a fragment answer to the given polar question:

- (39) a. Kim-i hakkyo-eyse pelsse tolawa-ss-ni?  
 Kim-NOM school-SRC already return-PST-QUE  
 ‘Did Kim return from school already?’  
 b. ka-ci-to anh-ass-e.  
 go-CONN-DEL NOT-PST-DECL  
 ‘(He) didn’t even go.’  
 c. \*ka-ci-to.  
 go-CONN-DEL

d. \* anh-ass-e.

NEG-PST-DECL

As shown in (39c) and (39d) here, neither the lexical verb nor the auxiliary verb alone can serve as an independent fragment answer. The two verbs must appear together, as shown in (39b). These constituenthood properties again indicate that the negative auxiliary forms a syntactic unit with a preceding lexical verb in Korean.

To address these complex verb properties, we could assume that an auxiliary verb forms a complex predicate, licensed by the following schema (see Bratt 1996; Chung 1998b; Kim 2016):

(40) HEAD-LIGHT Schema:

$$\left[ \begin{array}{ll} \textit{hd-light-phrase} \\ \text{COMPS} & [1] \\ \text{LIGHT} & + \\ \text{HEAD-DTR} & [2] \\ \text{DTRS} & \left\langle [3] \left[ \begin{array}{l} \text{LIGHT} + \\ \text{COMPS} [1] \end{array} \right], [2] \left[ \begin{array}{l} \text{LIGHT} + \\ \text{COMPS} \langle [3] \rangle \oplus [1] \end{array} \right] \right\rangle \end{array} \right]$$

This construction rule means that a LIGHT head expression combines with a LIGHT complement, yielding a light, quasi-lexical constituent (Bonami & Webelhuth 2013). When this combination happens, there is a kind of argument composition: the COMPS value of this lexical complement is passed up to the resulting mother. The constructional constraint thus induces the effect of argument composition in syntax, as illustrated by Figure 7. The auxiliary verb *anh-ass-ta* ‘NEG-PST-DECL’ combines with the matrix verb *ilk-ci* ‘read-CONN’, creating a well-formed HEAD-LIGHT construct. Note that the resulting construction inherits the COMPS value from that of the lexical complement *ilk-ci* ‘read-CONN’ in accordance with the structure-sharing imposed by the HEAD-LIGHT Schema in (40). That is, the HEAD-LIGHT Schema licenses the combination of an auxiliary verb with its lexical verb, while inheriting the lexical verb’s complement value as argument composition. The present system thus allows the argument composition at the syntax level, rather than in the lexicon.

The HPSG analyses have taken the negative auxiliary in Korean to select a lexical verb, whose combination forms a verb complex structure. The present analysis implies that there is no upper limit for the number of auxiliary verbs to occur in sequence, as long as each combination observes the morphosyntactic constraint on the preceding auxiliary expression. Consider the following:

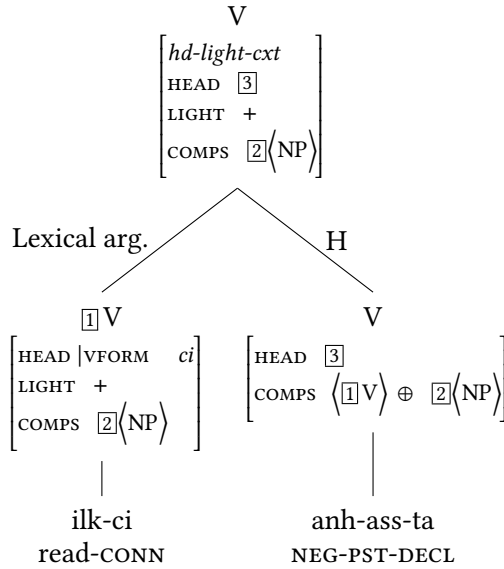


Figure 7: An instance (construct) of the HEAD-LIGHT Schema

- (41) a. sakwa-lul [mek-ci anh-ta].  
apple-ACC eat-CONN NEG-DECL  
'do not eat the apple'
- b. sakwa-lul [[mek-ko siph-ci] anh-ta].  
apple-ACC eat-CONN wish-CONN NEG-DECL  
'would not like to eat the apple'
- c. sakwa-lul [[[mek-ko siph-e] ha-ci] anh-ta].  
apple-ACC eat-CONN wish-CONN do-CONN NEG-DECL  
'do not like to eat the apple'
- d. sakwa-lul [[[[mek-ko siph-e] ha-key] toy-ci] anh-ta].  
apple-ACC eat-CONN wish-CONN do-CONN become-CONN  
NEG-DECL  
'do not become to like to eat the apple.'

As seen from the bracketed structures, we can add one more auxiliary verb to an existing HEAD-LIGHT construct with the final auxiliary bearing an appropriate connective marker. There is no upper limit to the possible number of auxiliary

verbs we can add (see Kim 2016: 88 for detailed discussion).

The present analysis in which the auxiliary negative forms a complex predicate structure with a lexical verb can also be applied for languages like Basque, as suggested by Crowgey & Bender (2011). They explore the interplay of sentential negation and word order in Basque. Consider their example:

- (42) *ez-ditu*                      *irakurri liburuak.*  
 NEG-3PLO.PRES.3SGS read.PRF book.ABS.PL  
 ‘has not read books’

Unlike Korean, the negative auxiliary *ez-ditu* precedes the main verb. Other than this ordering difference, just like Korean, the two form a verb complex structure, as represented in Figure 8 (adopted from Crowgey & Bender 2011):

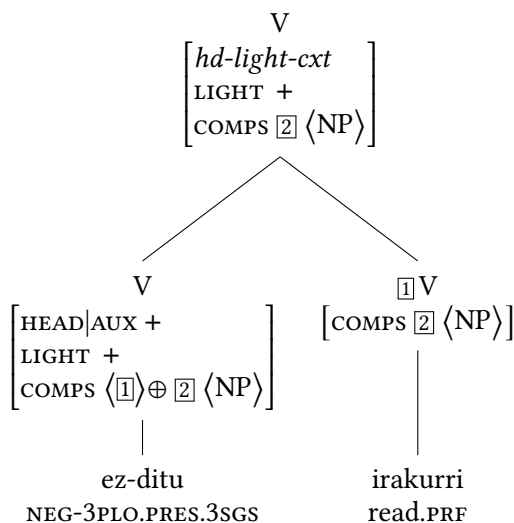


Figure 8: Partial structure of (42)

In the treatment of negative auxiliary verbs, the HPSG analyses have taken the negative auxiliary to be an independent lexical verb whose grammatical (syntactic) information is not distributed over different phrase structure nodes, but rather is incorporated into its precise lexical specifications. In particular, the negative auxiliary forms in many languages a verb complex structure whose constituenthood is motivated by other independent phenomena.

## 5 Preverbal negative

The final type of sentence negation is preverbal negatives, which we can observe in languages like Italian and Welsh:

- (43) a. Gianni non telefona a nessuno. (Italian, Borsley 2006: 62)  
 Gianni NEG telephones to nobody  
 ‘Gianni does not call anyone.’  
 b. Dw i ddim wedi gweld neb. (Welsh, Borsley & Jones 2005: 108)  
 am I NEG PERF see nobody  
 ‘I haven’t seen anybody.’

As seen here, the Italian preverbal negative *non* – also called negative particle or clitic – always precedes a lexical verb, whether finite or non-finite, as further attested by the following examples (Kim 2000: Chapter 4):

- (44) a. Gianni vuole che io non legga articoli di sintassi.  
 Gianni wants that I NEG read articles of syntax  
 ‘Gianni hopes that I do not read syntax articles.’  
 b. Non leggere articoli di sintassi è un vero peccato.  
 NEG to.read articles of syntax is a real shame  
 ‘Not to read syntax articles is a real shame.’  
 c. Non leggendo articoli di sintassi, Gianni trova la linguistica noiosa.  
 NEG reading articles of syntax Gianni finds linguistics boring  
 ‘Not reading syntax articles, Gianni finds linguistics boring.’

The derivational view again attributes the distribution of such a preverbal negative to the reflex of verb movement and functional projections (see Belletti 1990: Chapter 1). This line of analysis also appears to be persuasive in that the different scope of verb movement application could explain the observed variations among typologically related languages. Such an analysis, however, fails to capture unique properties of the preverbal negative in contrast to the morphological negative, the auxiliary negative, and the adverb negative.

Kim (2000) offers an HPSG analysis of Italian and Spanish negation. His analysis takes *non* to be an independent lexical head element, even though it is a clitic. This claim follows the analyses sketched by Monachesi (1993) and Monachesi (1998), which assume that there are two types of clitics: affix-like clitics and word-like clitics. Pronominal clitics belong to the former, whereas the clitic *loro* ‘to them’ to the latter. Kim’s analysis suggests that *non* also belongs to the latter

group.<sup>14</sup> Treating *non* as a word-like element, as given in the following, will allow us to capture its word-like properties, such as the possibility of it bearing stress and its separation from the first verbal element. However, it is not a phrasal modifier, but an independent particle (or clitic) which combines with the following lexical verb (see Kim 2000 for detailed discussion).

- (45) Lexical specifications for *non* in Italian:

$$\left[ \begin{array}{l} \text{PHON } \langle \textit{non} \rangle \\ \text{SYNSEM|LOC} \end{array} \left[ \begin{array}{l} \text{CAT} \left[ \begin{array}{l} \text{HEAD } \boxed{1} \\ \text{COMPS } \left\langle \textit{V} \left[ \begin{array}{l} \text{HEAD } \boxed{1} \\ \text{COMPS } \boxed{2} \\ \text{CONT } \boxed{3} \end{array} \right] \right\rangle \oplus \boxed{2} \end{array} \right] \\ \text{CONT} \left[ \text{RESTR } \left\{ \left[ \begin{array}{l} \text{PRED } \textit{neg-rel} \\ \text{ARG1 } \boxed{3} \end{array} \right] \right\} \right] \end{array} \right] \right]$$

This lexical entry roughly corresponds to the entry for Italian auxiliary verbs (and restructuring verbs with clitic climbing), in that the negator *non* selects a verbal complement and, further, that verb's complement list. One key property of *non* is its HEAD value: this value is in a sense undetermined, but structure-shared with the HEAD value of its verbal complement. The value is thus determined by what it combines with. When *non* combines with a finite verb, it will be a finite verb, and when it combines with an infinitive verb, it will be an infinitive verb.

In order to see how this system works, let us consider an Italian example where the negator combines with a transitive verb as in (1d), repeated here as (46):

- (46) Gianni non legge articoli di sintassi.  
Gianni NEG reads articles of syntax  
'Gianni doesn't read syntax articles.'

When the negator *non* combines with the finite verb *legge* that selects an NP object, the resulting combination will form a verb complex structure given in Figure 9.

Borsley (2006), adopting Kathol's (2000) topological approach, provides a linearization-based HPSG approach to capturing the distributional possibilities of negation in Italian and Welsh, which we have seen in (43a) and (43b), respectively. Different from Borsley & Jones's (2005) selectional approach where a negative

<sup>14</sup>But one main difference between *non* and *loro* is that *non* is a head element, whereas *loro* is a complement XP. See Monachesi (1998) for further discussion of the behavior of *loro* and its treatment.

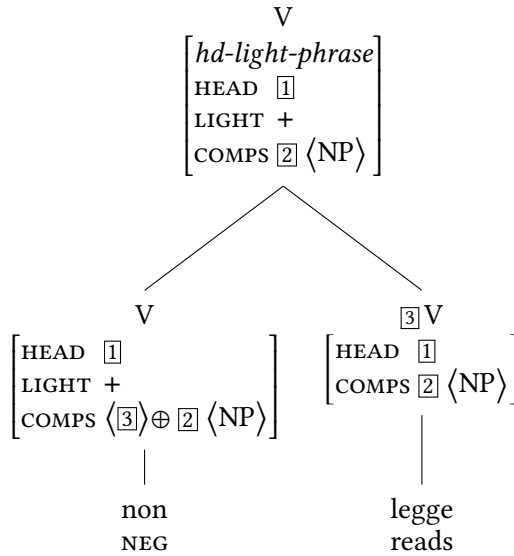


Figure 9: Verb complex structure of (46)

expression selects its own complement, Borsley’s linearization-based approach allows the negative expression to have a specified topological field. For instance, Borsley (2006), accepting the analysis of Kim (2000) where *non* is taken to be a type of clitic-auxiliary, posits the following order domain:

$$(47) \left[ \text{DOM} \left\langle \left[ \begin{array}{l} \textit{first} \\ \langle \textit{Gianni} \rangle \end{array} \right], \left[ \begin{array}{l} \textit{second} \\ \text{NEG} + \\ \langle \textit{non} \rangle \end{array} \right], \left[ \begin{array}{l} \textit{third} \\ \langle \textit{telephona} \rangle \end{array} \right], \left[ \begin{array}{l} \textit{third} \\ \text{NEG} + \\ \langle \textit{a nessuno} \rangle \end{array} \right] \right\rangle \right]$$

With this ordering domain, Borsley (2006) postulates that the Italian sentential negator *non* bearing the positive NEG feature is in the second field.<sup>15</sup> The analysis then can attribute the distributional differences between Italian and Welsh negators by referring to the difference in their domain value. That is, within the analysis, the Welsh NEG expression *ddim*, unlike Italian *non*, is defined to be in the third field, as illustrated in the following domain for the sentence (43b) (from Borsley 2006):<sup>16</sup>

<sup>15</sup>Borsley (2006) also notes that Italian negative expressions like *nessuno* ‘nobody’ also bear the feature NEG but are defined to be in the third field.

<sup>16</sup>Different from Borsley (2006), Borsley & Jones (2000) offer a selectional analysis of Welsh negation. That is, the finite negative verb selects two complements (e.g., subject and object) while the non-finite negative verb selects a VP. See Borsley & Jones (2000) for details.

$$(48) \left[ \text{DOM} \left( \left[ \begin{matrix} \text{second} \\ \langle dw \rangle \end{matrix} \right], \left[ \begin{matrix} \text{third} \\ \langle i \rangle \end{matrix} \right], \left[ \begin{matrix} \text{third} \\ \text{NEG} + \\ \langle ddim \rangle \end{matrix} \right], \left[ \begin{matrix} \text{third} \\ \langle wedi gweld neb \rangle \end{matrix} \right] \right) \right]$$

As such, with the assumption that constituents have an order domain to which ordering constituents apply, the topological approach enables us to capture the complex distributional behavior of the negators in Italian and Welsh.

## 6 Other related phenomena

In addition to this work focusing on the distributional possibilities of negation, there has also been work on genitive negation and negative concord.

Przepiórkowski (2000) offers an HPSG analysis for the non-local genitive of negation in Polish. In Polish, negation is realized as the prefix *nie* to a verbal expression (see Przepiórkowski & Kupść 1999; Przepiórkowski 2000; 2001), and Polish allows the object argument to be genitive-marked when the negative marker is present, as in (49b). The assignment of genitive case to the object is also effective in the unbounded relation as shown in (50b) (data from Przepiórkowski 2000: 120):

- (49) a. *Lubię Marię.*  
           like.1st.SG Mary.ACC  
           ‘I like Mary.’  
       b. *Nie lubię Marii / \*Marię.*  
           NEG like.1st.SG Mary.GEN   Mary.ACC  
           ‘I don’t like Mary.’
- (50) a. *Janek wydawał się lubić Marię.*  
           John seemed   RM like.INF Mary.ACC  
           ‘John seemed to like Mary.’  
       b. *Janek nie wydawał się lubić Marii / Marię.*  
           John NEG seemed   RM like.INF Mary.GEN   Mary.ACC  
           ‘John did not seem to like Mary.’

To account for this kind of phenomenon, Przepiórkowski (2000) suggests that the combination of the negative morpheme *nie* with a verb stem introduces the feature NEG. With this lexical specification, his analysis introduces the following principle (adopted from Przepiórkowski 2000: 143):



(51) Case Principle for Polish:

$$\left[ \begin{array}{l} \text{HEAD} \left[ \begin{array}{l} \text{verb} \\ \text{NEG } + \end{array} \right] \\ \text{ARG-ST } \boxed{1} \text{ } \langle \text{nelist} \oplus \langle [\text{CASE } \textit{str}] \rangle \oplus \boxed{2} \rangle \end{array} \right] \Rightarrow [\text{ARG-ST } \boxed{1} \oplus \langle [\text{CASE } \textit{gen}] \rangle \oplus \boxed{2}]$$

The principle allows a NEG verbal expression to assign the CASE value *gen* to its non-initial argument. This is why the negative word *nie* triggers the object complement of (49a) to be GEN-marked. As for the long distance genitive in (50a), *Przepiórkowski* (2000: 145) allows the VP complement of a raising verb like *seem* to optionally undergo the lexical argument composition. This process yields the following output for the matrix verb in (50a):

$$(52) \left[ \begin{array}{l} \text{PHON } \langle \textit{nie wydawał się} \rangle \\ \text{HEAD} \left[ \begin{array}{l} \text{verb} \\ \text{NEG } + \end{array} \right] \\ \text{ARG-ST } \langle \text{NP}, \text{VP} [\text{COMPS } \boxed{1} \langle \text{NP} \rangle] \rangle \oplus \boxed{1} \langle \text{NP} [\textit{str}] \rangle \end{array} \right]$$

This lexical specification allows the object NP of the verb to be GEN-marked in accordance with the constraint in (51). In *Przepiórkowski*'s analysis, the feature NEG thus tightly interacts with the mechanism of argument composition and construction-based case assignment (or satisfaction).

Negation in languages like French, Italian, and Polish, among others, also involves negative concord. *De Swart & Sag* (2002) investigate negative concord in French, where multiple occurrences of phonologically negative constituents express either double negation or single negation:

(53) *Personne (n')aime personne.*

no.one    ne.likes    no.one

'No one is such that they love no one.' (double negation)

'No one likes anyone.' (negative concord)

The double negation reading in (53) has two quantifiers, while the single negation reading is an instance of negative concord, where the two quantifiers merge into one. *De Swart & Sag* (2002) assume that the information of each quantifier is stored in *QSTORE* and retrieved at the lexical level in accordance with constraints on the verb's arguments and semantic content. For instance, the verb *n'aime* in (53) will have two different ways of retrieving the *QSTORE* value, as given in the following:<sup>17</sup>

<sup>17</sup>The *QSTORE* value contains information roughly equivalent to first order logic expressions like *NOx[Person(x)]*. See *de Swart & Sag* (2002).

- (54) a. 
$$\left[ \begin{array}{ll} \text{PHON} & \langle n' aime \rangle \\ \text{ARG-ST} & \langle \text{NP}[\text{STORE } \{1\}], \text{NP}[\text{STORE } \{2\}] \rangle \\ \text{QUANTS} & \langle 1, 2 \rangle \end{array} \right]$$
- b. 
$$\left[ \begin{array}{ll} \text{PHON} & \langle n' aime \rangle \\ \text{ARG-ST} & \langle \text{NP}[\text{STORE } \{1\}], \text{NP}[\text{STORE } \{2\}] \rangle \\ \text{QUANTS} & \langle 1 \rangle \end{array} \right]$$

In the AVM (54b), the two quantifiers are retrieved, inducing double negation ( $\neg\exists x\neg\exists y[\text{love}(x,y)]$ ) while in (54a), the two have a resumptive interpretation in which the two are merged into one ( $\neg\exists x\exists y[\text{love}(x,y)]$ ).<sup>18</sup> This analysis, coupled with the complement treatment of *pas* as a lexically stored quantifier, can account for why *pas* does not induce a resumptive interpretation with a quantifier (from de Swart & Sag 2002):

- (55) Il ne va pas nulle part, il va á son travail.  
 he ne goes NEG no where he goes at his work  
 ‘He does not go nowhere, he goes to work.’

In this standard French example, de Swart & Sag (2002), accepting the analysis of Kim (2000) as *pas* as a complement, specify the adverbial complement *pas* to be included the negative quantifier in the QUANTS value. This means there would be no resumptive reading for standard French, inducing double negation as in (56):<sup>19</sup>

- (56) 
$$\left[ \begin{array}{ll} \text{PHON} & \langle ne va \rangle \\ \text{ARG-ST} & \langle \text{ADV}_I[\text{STORE } \{1\}], \text{NP}[\text{STORE } \{2\}] \rangle \\ \text{QUANTS} & \langle 1, 2 \rangle \end{array} \right]$$

Przepiórkowski & Kupść (1999) and Borsley & Jones (2000) also investigate negative concord in Polish and Welsh and offer HPSG analyses. Consider a Welsh example from Borsley & Jones (2000):

- (57) Nid oes neb yn yr ystafell  
 NOT is no.one in the room  
 ‘There is no one in the room.’

<sup>18</sup>See de Swart & Sag (2002) for detailed formulation of the retrieval condition of stored value.

<sup>19</sup>See de Swart & Sag (2002) for cases where *pas* induces negative concord.

Borsley & Jones (2000), identifying n-words with the feature NC (negative concord), takes the verb *nid oes* to bear the positive NEG value, and specifies the subject *neb yn* to carry the positive NC (negative concord) feature. This selectional approach, interacting with well-defined features, tries to capture how more than one negative element corresponds to a single semantic negation.<sup>20</sup>

## 7 Conclusion

One of the most attractive consequences of the derivational perspective on negation has been that one uniform category, given other syntactic operations and constraints, explains the derivational properties of all types of negation in natural languages, and can further provide a surprisingly close and parallel structure among languages, whether typologically related or not. However, this line of thinking runs the risk of missing the peculiar properties of each type of negation. Each individual language has its own way of expressing negation, and moreover has its own restrictions in the surface realizations of negation which can hardly be reduced to one uniform category.

In the non-derivational HPSG analyses for the four main types of sentential negation that I have reviewed in this chapter, there is no uniform syntactic element, though a certain universal aspect of negation does exist, viz. its semantic contribution. Languages appear to employ various possible ways of negating a clause or sentence. Negation can be realized as different morphological and syntactic categories. By admitting morphological and syntactic categories, we have been able to capture their idiosyncratic properties in a simple and natural manner. Furthermore, this theory has been built upon the lexical integrity principle, the thesis that the principles that govern the composition of morphological constituents are fundamentally different from the principles that govern sentence structures. The obvious advantage of this perspective is that it can capture the distinct properties of morphological and syntactic negation, and also of their distribution, in a much more complete and satisfactory way.

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<sup>20</sup>See Borsley & Jones (2000) for detailed discussion.

## Abbreviations

3SGS	3rd singular subject
3PLO	3rd plural object
CONN	connective
DEL	delimiter
HON	honorific
NPST	nonpast
PERF	perfective
PRES	present
RM	reflexive marker

## Acknowledgements

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## Chapter 19

# Ellipsis

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This chapter provides an overview of HPSG analyses of ellipsis. The structure of the chapter follows three types of ellipsis, nonsentential utterances, predicate ellipsis (including VP ellipsis), and nonconstituent coordination, with three types of analyses applied to them. The analyses characteristically don't admit silent syntactic material for any ellipsis phenomena with the exception of certain types of nonconstituent coordination.

## 1 Introduction

Ellipsis is a phenomenon that involves a noncanonical mapping between syntax and semantics. What appears to be a syntactically incomplete utterance still receives a semantically complete representation, based on the features of the surrounding context, be the context linguistic or nonlinguistic. The goal of syntactic theory is thus to account for how the complete semantics can be reconciled with the apparently incomplete syntax. One of the key questions here relates to the structure of the ellipsis site, that is, whether or not we should assume the presence of invisible syntactic material. This chapter begins by introducing three types of ellipsis (nonsentential utterances, predicate ellipsis, and nonconstituent coordination) that have attracted considerable attention and received treatment within HPSG. We next overview existing evidence for and against the so-called WYSIWYG ('What You See Is What You Get') approach to ellipsis, where no invisible material is posited at the ellipsis site. Finally, we walk the reader through

three types of HPSG analyses applied to the three types of ellipsis presented in Section 2.

refer to other sections as well. This is usually done in introductions.

## 2 Three types of ellipsis

Depending on the type of analysis by means of which HPSG handles them, elliptical phenomena can be broadly divided into three types: nonsentential utterances, predicate ellipsis (including VP ellipsis), and nonconstituent coordination. We overview the key features of these types here before discussing in greater detail how they have been brought to bear on the question of whether there is invisible syntactic structure at the ellipsis site or not. We begin with stranded XPs, which HPSG treats as nonsentential utterances, and then move on to predicate and argument ellipsis, followed by phenomena known as nonconstituent coordination.

### 2.1 Nonsentential utterances

This section introduces utterances smaller than a sentence, which we refer to as *nonsentential utterances* (NUs). These range from *Bare Argument Ellipsis* (BAE) (1), including fragment answers (2), to direct or embedded sluicing (3)–(4). Sluicing hosts stranded *wh*-phrases and has the function of an interrogative clause, while BAE hosts XPs representing various syntactic categories and typically has the function of a declarative clause.<sup>1</sup>

- (1) A: You were angry with them.  
B: Yeah, angry with them and angry with the situation.
- (2) A: Where are we?  
B: In Central Park.
- (3) A: So what did you think about that?  
B: About what?
- (4) A: There's someone at the door.  
B: Who?/I wonder who.

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<sup>1</sup>Several subtypes of nonsentential utterances can be distinguished, based on their contextual functions, which we don't discuss here (for a recent taxonomy, see [Ginzburg 2012](#)).