

Chapter 18

Negation

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Each language has a way to express (sentential) negation that reverses the truth value of a certain sentence, but employs language-particular expressions and grammatical strategies. There are four main types of negatives in expressing sentential negation: the adverbial negative, the morphological negative, the negative auxiliary verb, and the preverbal negative. This chapter discusses HPSG analyses for these four strategies in marking sentential negation.

1 Modes of expressing negation

There are four main types of negative markers in expressing negation in languages: the morphological negative, the negative auxiliary verb, the adverbial negative, and the clitic-like preverbal negative (see Dahl 1979; Payne 1985; Zanuttini 2001; Dryer 2005).¹ Each of these types is illustrated in the following:

- (1) a. Ali elmalar-i ser-me-di-Ø. (Turkish)
Ali apples-ACC like-NEG-PST-3SG
'Ali didn't like apples.'
- b. sensayng-nim-i o-ci anh-usi-ess-ta. (Korean)
teacher-HON-NOM come-CONN NEG-HON-PST-DECL
'The teacher didn't come.'
- c. Dominique (n') écrivait pas de lettre. (French)
Dominique NEG wrote NEG of letter
'Dominique did not write a letter.'

¹The term *negator* or *negative marker* is a cover term for any linguistic expression functioning as sentential negation.



- d. Gianni non legge articoli di sintassi. (Italian)
 Gianni NEG reads articles of syntax
 ‘Gianni doesn’t read syntax articles.’

As shown in (1a), languages like Turkish have typical examples of morphological negatives where negation is expressed by an inflectional category realized on the verb by affixation. Meanwhile, languages like Korean employ a negative auxiliary verb as in (1b).² The negative auxiliary verb here is marked with basic verbal categories such as agreement, tense, aspect, and mood, while the lexical, main verb remains in an invariant, participle form. The third major way of expressing negation is to use an adverbial negative. This type of negation, forming an independent word, is found in languages like English and French, as given in (1c). In these languages, negatives behave like adverbs in their ordering with respect to the verb.³ The fourth type is to introduce a preverbal negative. The negative marker in Italian in (1d), preceding a finite verb like other types of clitics in the language, belongs to this type.

In analyzing these four main types of sentential negation, there have been two main strands: derivational and non-derivational views. The derivational view has claimed that the positioning of all of the four types of negatives is basically determined by the interaction of movement operations, a rather large set of functional projections including NegP, and their hierarchically fixed organization. In particular, to account for the fact that, unlike English, only French allows main or lexical verb inversion as in (1c), Pollock (1989; 1994) and a number of subsequent researchers have interpreted these contrasts as providing critical motivation for the process of head movement and the existence of functional categories such as MoodP, TP, AgrP, and NegP (see Belletti 1990; Zanuttini 1997; Chomsky 1991; 1993; Lasnik 1995; Haegeman 1995; 1997; Vikner 1997; Zanuttini 2001; Zeijlstra 2015). Within the derivational view, it has thus been widely accepted that the variation between French and English can be explained only in terms of the respective properties of verb movement and its interaction with a view of clause structure organized around functional projections.

Departing from the derivational view, the non-derivational, lexicalist view introduces no uniform syntactic category (e.g., Neg or NegP) for the different 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 expres-

²Korean is peculiar in that it has two ways to express sentential negation: a negative auxiliary (a long form negation) and a morphological negative (a short form negation) for sentential negation. See Kim (2000; 2016) and references therein for details.

³In French, the negator *pas* often accompanies the optional preverb clitic *ne*. See Godard (2004) for detailed discussion on the uses of the clitic *ne*.

sion. 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: 343–347), Baker (1991: 401), Ernst (1992), Kim (2000: 91), and Warner (2000: 181). 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; Crysmann 2010; Bender & Lascarides 2013).

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.⁴ When necessary, the chapter also discusses implications for the theory of grammar. It starts with the HPSG analyses of adverbial negatives in English and French, which have been most extensively studied in Transformational Grammars (Section 2), and then moves to the discussion of morphological negatives (Section 3), negative auxiliary verbs (Section 4), and preverbal negatives (Section 5). The chapter also reviews the HPSG analyses of phenomena like genitive of negation and negative concord which are sensitive to the presence of negative expressions (Section 6). 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, Kim & Sag 2002).⁵

⁴This chapter grew out of Kim (2000; 2018).

⁵German 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.

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, 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. (French)
 Robin NEG likes NEG Stacy
 'Robin does not like Stacy.'
- b. * Robin ne pas aime Stacy.
 Robin NEG NEG likes Stacy
- (5) a. Ne pas parler Français est un grand désavantage en ce cas.
 NEG 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.
 NEG 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.

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

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 po-

sition 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. (French)
 NEG NEG 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).⁶

⁶Here I 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.

(12) LOCAL values of *not* and *ne-pas*:

$$\left[\begin{array}{l} \text{CAT} | \text{HEAD} \left[\begin{array}{l} \text{adv} \\ \text{MOD VP}[\text{nonfin}]:\boxed{1} \\ \text{PRE-MODIFIER +} \end{array} \right] \\ \text{CONT} \left[\begin{array}{l} \text{neg-rel} \\ \text{ARG1 } \boxed{1} \end{array} \right] \end{array} \right]$$

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.

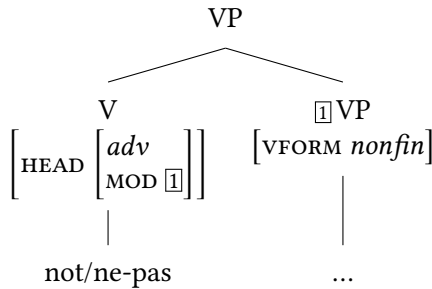


Figure 1: Structure of constituent negation

The lexical specification as premodifier (PRE-MODIFIER+) together with an LP rule requiring such adjuncts to precede the head they modify (Müller 2021: 375, Chapter 10 of this volume) ensures that both *ne-pas* and *not* precede the VPs that they modify. Since the negator modifies a VP it follows 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.
- (14) a. [Ne pas [parler français]] est un grand désavantage (French)
 NEG NEG to.speak French is a great disadvantage
 en ce cas.
 in this case
 b. * [Ne parler pas français] est un grand désavantage en ce cas.
 NEG to.speak NEG 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 I 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. (French)
Dominique NEG 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 one can observe in an example like (17) (see Klima 1964; Baker 1991; Warner 2000; Kim & Michaelis 2020: 200).⁷

⁷Warner (2000) and Bender & Lascarides (2013) discuss scopal interactions of negation with auxiliaries (modals) and quantifiers within the system of Minimal Recursion Semantics (MRS). On MRS see also Koenig & Richter (2021: Section 6.1), Chapter 22 of this volume.

- (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.

The need for this distinction also comes from distributional possibilities. The adverb *never* is a true diagnostic of a VP modifier, and I use these observed contrasts between *never* and *not* to reason about what the properties of the negator *not* must be. As noted, the sentential negation cannot modify a finite VP, and is thus 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 (see Warner 2000 and Kim & Sag 2002):⁸

- (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*.

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. *Too*, *so*, and *indeed* also behave like this:

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

⁸As seen from an attested example like *I, being the size I am, could hide as one of them, whereas she could never*, in a limited context the adverb *never* is stranded after a modal auxiliary, but not after a non-modal auxiliary verb like *be*, *have* and *do*. Such a stranding seems to be possible when the adverb expresses a contrastive focus meaning.

These expressions are used to reaffirm the truth of the sentence in question and follow a finite auxiliary verb. This suggests that *too*, *so*, *indeed* and the sentential *not* belong to a special class of adverbs (which I call Adv_I) that combine with a preceding auxiliary verb (see Kim 2000: 94–95).

Noting the properties of *not* that were discussed so far, the HPSG analyses of Abeillé & Godard (1997), Kim (2000: Section 3.4), and Warner (2000) have taken this group of adverbs (Adv_I) including the sentential negation *not* to function as the complement of a finite auxiliary verb via the following lexical rule:⁹

$$(22) \text{ Adverb-Complement Lexical Rule: } \left[\begin{array}{c} \textit{fin-aux} \\ \text{SYNSEM|LOC|CAT} \left[\begin{array}{c} \text{HEAD} \left[\begin{array}{cc} \text{AUX} & + \\ \text{VFORM} & \textit{fin} \end{array} \right] \\ \text{COMPS} \left[\overline{1} \right] \end{array} \right] \end{array} \right] \mapsto \left[\begin{array}{c} \textit{adv-comp-fin-aux} \\ \text{SYNSEM|LOC|CAT|COMPS} \left(\langle \text{Adv}_I \rangle \oplus \left[\overline{1} \right] \right) \end{array} \right]$$

This lexical rule specifies that when the input is a finite auxiliary verb, the output is a finite auxiliary ($\textit{fin-aux} \mapsto \textit{adv-comp-fin-aux}$) that selects Adv_I (including the sentential negator) as an additional complement.¹⁰ This would then license a structure like in Figure 2.

As shown in Figure 2, the finite auxiliary verb *could* combines with two complements, the negator *not* (Adv_I) and the VP *approve the bill*. This combination results in a well-formed head-complement phrase. By treating *not* as both a modifier (constituent negation) and a lexical complement of a finite auxiliary (sentential negation), it is thus possible to 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*.

⁹The symbol \oplus stands for the relation *append*, i.e., a relation that concatenates two lists. The rule adds the adverb to the COMPS list. More recent variants use the ARG-ST list for valence representations. The rule can be adapted to the ARG-ST format, but for the sake of readability, I stay with the COMPS-based analysis.

¹⁰As discussed in the following, this type of lexical rule allows us to represent a key difference between English and French, namely that French has no restriction on the feature AUX to introduce the negative adverb *pas* as a finite verb's complement.

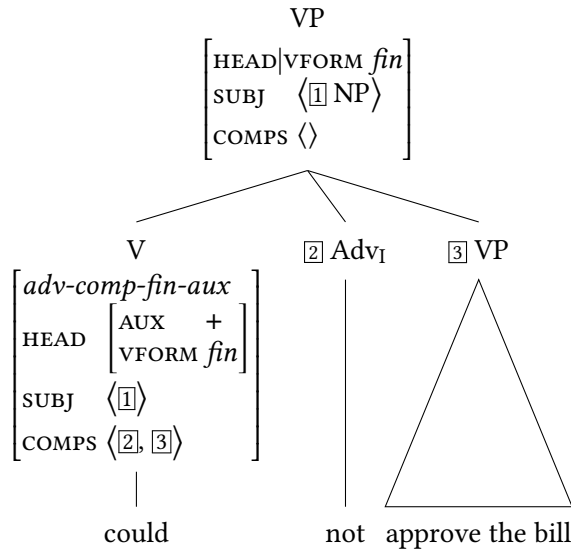


Figure 2: Structure of sentential negation

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 (see Kim 2000: 99 and Kim & Michaelis 2020: 209 for similar proposals):

- (24) Predicate ellipsis lexical rule:
- $$\left[\begin{array}{c} \textit{adv-comp-fin-aux} \\ \text{ARG-ST} \langle \underline{1} \text{ XP}, \underline{2} \text{ ADV}_I, \text{YP} \rangle \end{array} \right] \mapsto \left[\begin{array}{c} \textit{aux-ellipsis-wd} \\ \text{ARG-ST} \langle \underline{1}, \underline{2}, \text{YP}[\textit{pro}] \rangle \end{array} \right]$$

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 third argument is realized as a small *pro*, which by definition behaves like a slashed expression in not mapping into the syntactic grammatical function COMPS (see Abeillé & Borsley (2021: Section 4.1), Chapter 1 of this volume and Davis, Koenig & Wechsler (2021: Section 3), Chapter 9 of this volume for mappings from ARG-ST to COMPS). The YP without structure sharing is a shorthand for carrying over all information from the input of the lexical rule to the output with the exception of the type of the YP-AVM. The type at the input is *canonical* and the type at the output is *pro*. This analysis would then license the structure in Figure 3.

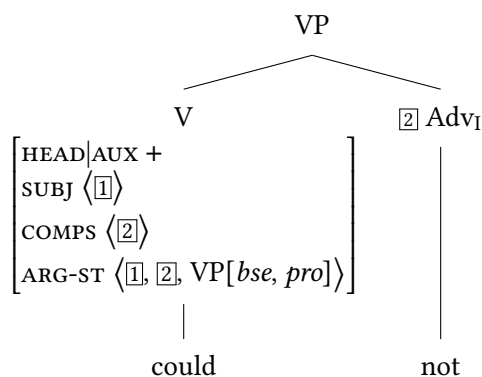


Figure 3: A licensed VP ellipsis structure

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

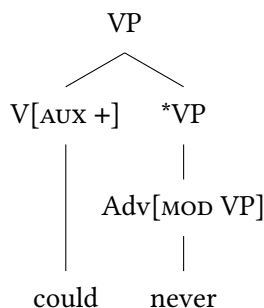


Figure 4: Ill-formed Head-Adjunct structure

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 is repeated here.

- (25) a. * Robin ne pas aime Stacy. (French)
 Robin NEG NEG likes Stacy
 ‘Robin does not like Stacy.’
 b. Robin (n’) aime pas Stacy.
 Robin NEG 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 (1997) for French adverbs including *pas*. Building upon this previous work, Kim (2000) and Abeillé & Godard (2002) allow the adverb *pas* to function as a syntactic complement of a finite verb in French.¹¹ 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.

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 in 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 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. (French)
 if I.had of money I NEG 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 NEG NEG buy a car
- (27) a. Ne mange pas ta soupe. (French)
 NEG eat NEG your soup
 ‘Don’t eat your soup!’
 b. * Ne pas mange ta soupe.
 NEG NEG eat your soup

¹¹Following Abeillé & Godard (2002), one could assume *ne* to be an inflectional affix which can be optionally realized in the output of the lexical rule in Modern French.

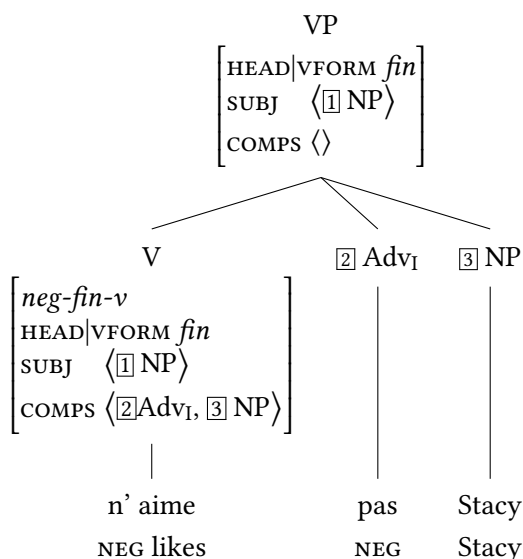


Figure 5: Partial structure of (25b)

- (28) a. Il est important que vous ne répondez pas. (French)
 it is important that you NEG answer NEG
 ‘It is important that you not answer.’
- b. * Il est important que vous ne pas répondez.
 it is important that you NEG NEG answer
- (29) a. Ne parlant pas Français, Stacy avait des difficultés. (French)
 NEG speaking NEG French Stacy had of difficulties
 ‘Not speaking French, Stacy had difficulties.’
- b. * Ne pas parlant Français, Stacy avait des difficultés.
 NEG 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 +] of the verb they combine with, and this induces the difference in the positions of 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* (Turkish)
 go-NEG-FUT-COP-1SG
 ‘I will not come.’
 b. *kare-wa kinoo kuruma-de ko-na-katta.* (Japanese)
 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 is supported by their participation in morphophonemic alternations. 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-yেকে* ‘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 in the following:

- (31) a. *tabe-sase-na-i/*tabe-na-sase-i* (Japanese)
 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).

Given these observations, 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 the following lexical rule (for a similar treatment see Kim 2000: 36; Crowgey 2012: 111–112):

(32) Negative word formation lexical rule:

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

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).¹² See Crysmann (2021), Chapter 21 of this volume for details on how the realization of inflectional features is modeled in HPSG.

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*:

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

Following Borsley & Krer (2012: 10), one can treat 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):¹³

¹²In a similar manner, Przepiórkowski & Kupść (1999) and Przepiórkowski (2000; 2001) discuss aspects of Polish negation, which is realized as the prefix *nie* to a verbal expression.

¹³Borsley & 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.

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

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 1995). 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.

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. (Korean)
 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 SVO languages, however, the negative auxiliary almost invariably occurs immediately before the lexical verb (Payne 1985: 212). Finnish also exhibits this property (Mitchell 1991: 376):

- (36) Minä e-n puhu-isi. (Finish)
 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 negative auxiliary 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 Vasisht 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 negative auxiliaries, 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*. (Korean)
 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 1998; Kim 2016).

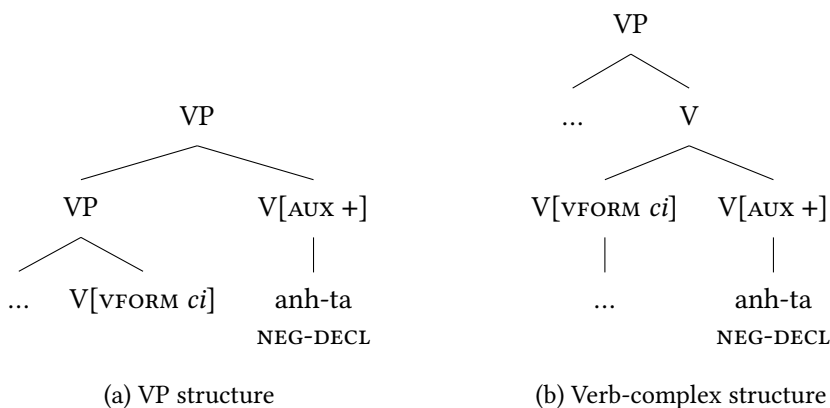


Figure 6: Two possible structures for the negative auxiliary construction

The distributional properties of the negative auxiliary in the language 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 (Korean)
 Mimi-TOP anyway city-ACC anyway leave-CONN
 (*yehathun) anh-ass-ta.
 anyway 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 (39c) nor the auxiliary verb alone (39d) can serve as a fragment answer to the corresponding polar question:

- (39) a. Kim-i hakkyo-eyse pelsse tolawa-ss-ni? (Korean)
 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

The lexical verb and the auxiliary must appear together as in (39b). These constituenthood properties indicate that the negative auxiliary forms a syntactic unit with a preceding lexical verb in Korean.

To address these complex verb properties, one could assume that an auxiliary verb forms a complex predicate, licensed by the following schema (see Kim 2016: 95):

- (40) HEAD-LIGHT Schema:
- $$\left[\begin{array}{l} \text{head-light-phrase} \\ \text{COMPS } \boxed{1} \\ \text{LIGHT } + \\ \text{HEAD-DTR } \boxed{2} \\ \text{DTRS } \left\langle \boxed{3} [\text{LIGHT } +], \boxed{2} \left[\begin{array}{l} \text{COMPS } \boxed{1} \oplus \langle \boxed{3} \rangle \\ \text{LIGHT } + \end{array} \right] \right\rangle \end{array} \right]$$

This construction schema means that a LIGHT head expression combines with a LIGHT complement, yielding a light, quasi-lexical constituent (Bonami & Webelhuth 2012). 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-*

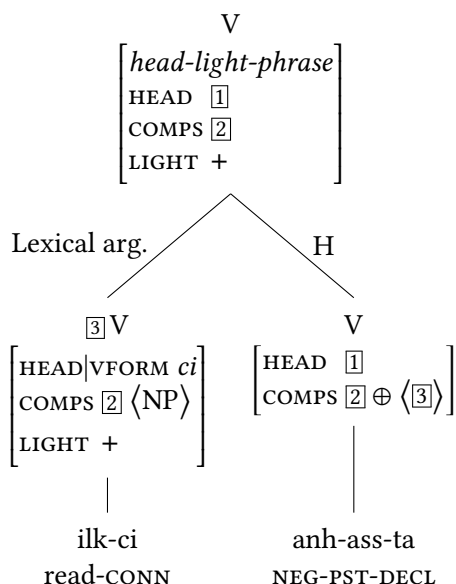


Figure 7: An example structure licensed by the HEAD-LIGHT Schema

ta ‘NEG-PST-DECL’ combines with the matrix verb *ilk-ci* ‘read-CONN’, creating a well-formed *head-light-phrase*. 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 through argument composition. The present system thus allows argument composition at the syntax level, rather than in the lexicon.

The HPSG analysis I have outlined has taken the negative auxiliary in Korean to select a lexical verb, the resulting combination forming a verbal complex. 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:

- (41) a. Sakwa-lul [mek-ci anh-ta]. (Korean)
 apple-ACC eat-CONN NEG-DECL
 ‘(I/he/she) do/does not eat the apple.’
- b. Sakwa-lul [[mek-ko siph-ci] anh-ta].
 apple-ACC eat-CONN wish-CONN NEG-DECL
 ‘(I/he/she) 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
 ‘(I/he/she) do/does not like to eat the apple.’
- d. Sakwa-lul [[[[mek-ko siph-e] ha-key] toy-ci]
 apple-ACC eat-CONN wish-CONN do-CONN become-CONN
 anh-ta].
 NEG-DECL
 Literally: ‘(I/he/she) do/does not become to like to eat the apple.’

As seen from the bracketed structures, it is possible to add one more auxiliary verb to an existing HEAD-LIGHT phrase with the final auxiliary bearing an appropriate connective marker. There is no upper limit to the possible number of auxiliary verbs one can add (see Kim 2016: 88 for detailed discussion).

The present analysis in which the negative auxiliary forms a complex predicate structure with a lexical verb can also be applied to languages like Basque, as suggested by Crowgey & Bender (2011). They explore the interplay of sentential negation and word order in Basque. Consider their example (p. 51):

- (42) ez-ditu irakurri liburuak (Basque)
 NEG-3PLO.PRS.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.

In the treatment of negative auxiliary verbs, 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 independent phenomena.

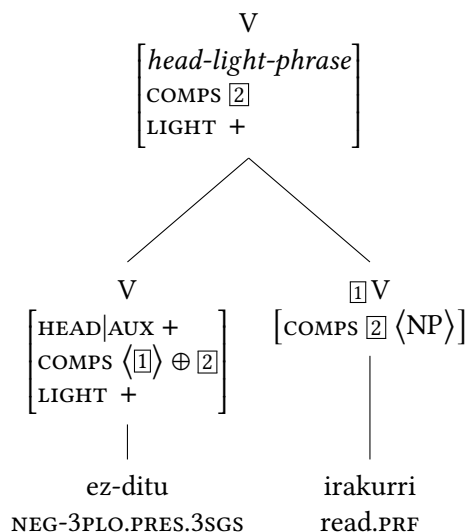


Figure 8: Negation verb combination in Basque adapted from Crowgey & Bender (2011: 51)

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 PRF 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. (Italian)
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 negative auxiliary, and the adverbial negative.

Kim (2000) offers an HPSG analysis of Italian and Spanish negation. His analysis takes *non* to be an independent lexical head, 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’ belongs to the latter. Kim’s analysis suggests that *non* also belongs to the latter group.¹⁴ Treating *non* as a word-like element, as 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:

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

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

¹⁴One main difference between *non* and *loro* is that *non* is a head, whereas *loro* is a complement XP. See Monachesi (1998) for further discussion of the behavior of *loro* and its treatment.

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 infinitival verb, it will be a non-finite 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. (Italian)
 Gianni NEG reads articles of syntax
 'Gianni doesn't read syntax articles.'

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

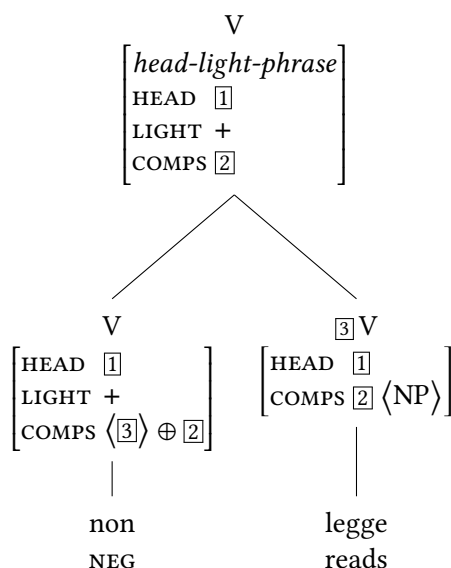


Figure 9: Verb complex structure of (46)

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

expression selects its own complement, Borsley's linearization-based approach allows the negative expression to have a specified topological field. For instance, Borsley (2006: 79), accepting the analysis of Kim (2000) where *non* is taken to be a type of clitic-auxiliary, posits the following order domain:

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

With this ordering domain, Borsley (2006) postulates that the Italian sentential negator *non* bearing the positive NEG feature is in the second field.¹⁵ The analysis then can attribute the distributional differences between Italian and Welsh negators by referring to the difference in their domain value. That is, in Borsley's analysis, the Welsh NEG expression *ddim*, unlike Italian *non*, is required to be in the third field, as illustrated in the following domain for the sentence (43b) (from Borsley 2006: 76):¹⁶

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

As such, with the assumption that constituents have an order domain to which ordering constraints 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 HPSG work on genitive of 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 need not be local as shown in (50b) (data from Przepiórkowski 2000: 120):

¹⁵Borsley (2006) also notes that Italian negative expressions like *nessuno* 'nobody' also bear the feature NEG but are required to be in the third field.

¹⁶Different 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.

- (49) a. *Lubię Marię* (Polish)
 like.1SG Mary.ACC
 ‘I like Mary.’
 b. *Nie lubię Marii / *Marię*
 NEG like.1SG Mary.GEN Mary.ACC
 ‘I don’t like Mary.’
- (50) a. *Janek wydawał się lubić Marię.* (Polish)
 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 (adapted from Przepiórkowski 2000: 143):

- (51) Part of the Case Principle for Polish:

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

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

- (52) Representation for *nie wydawał się* ‘did not seem’ when combined with *lubić* ‘like’:

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

This lexical specification allows the object NP of the embedded 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 lexical construction-specific 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 negative constituents express either double negation or single negation:

- (53) *Personne (n') aime personne.* (French)
 no.one NEG 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 contributed by 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:¹⁷

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

 b.
$$\left[\begin{array}{l} \text{PHON} \quad \langle n'aime \rangle \\ \text{ARG-ST} \quad \langle \text{NP}[\text{QSTORE } \{1\}], \text{NP}[\text{QSTORE } \{2\}] \rangle \\ \text{QUANTS} \quad \langle 1 \rangle \end{array} \right]$$

In the AVM (54a), the two quantifiers are retrieved, inducing double negation ($\neg\exists x\neg\exists y[\text{love}(x,y)]$) while in (54b), the two have a resumptive interpretation in which the two are merged into one ($\neg\exists x\exists y[\text{love}(x,y)]$).¹⁸ 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: 376):

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

¹⁷The QSTORE value contains information roughly equivalent to first order logic expressions like $\text{NOx}[\text{Person}(x)]$. See de Swart & Sag (2002).

¹⁸See de Swart & Sag (2002) for detailed formulation of the retrieval of stored value.

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

$$(56) \left[\begin{array}{l} \text{PHON} \quad \langle ne \ va \rangle \\ \text{ARG-ST} \quad \langle \text{ADV}_1[\text{QSTORE } \{1\}], \text{NP}[\text{QSTORE } \{2\}] \rangle \\ \text{QUANTS} \quad \langle 1, 2 \rangle \end{array} \right]$$

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: 17):

- (57) Nid oes neb yn yr ystafell (Welsh)
 NEG is no.one in the room
 ‘There is no one in the room.’

Borsley & Jones (2000), identifying n-words with the feature NC (negative concord), takes the verb *nid oes* ‘NOT is’ to bear the positive NEG value, and specifies the subject *neb* 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 can correspond to a single semantic negation (see Borsley & Jones 2000 for detailed discussion).

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 particular 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.

¹⁹See de Swart & Sag (2002), Richter & Sailer (2004), and Koenig & Richter (2021: Section 6.2.1), Chapter 22 of this volume for cases where *pas* induces negative concord.

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, it was possible 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.

Abbreviations

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

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