

Configurational and Linearization-based Approaches to Negative Inversion

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1 Introduction

It has been suggested in mainstream syntactic frameworks such as Minimalism and Principles-and-Parameters theory that the only information contained in tree diagrams is that of constituent structure, and not of linear order since the latter can be predicted from constituent structure (e.g., Kayne 1994). An important consequence of this view is that all syntactic operations must be sensitive to hierarchical structure, and cannot refer to word order. The standard framework of Head-Driven Phrase Structure Grammar (HPSG; Pollard and Sag 1994), following GPSG (Gazdar et al. 1985), has separate immediate dominance (ID) and linear precedence (LP) constraints. Linear order is a property of phonology (represented as a value of PHONOLOGY attribute), but it is closely related to constituent structure: the phonology of a set of sisters cannot be separated by the phonology of a non-sister. Let us call this type of view on linear order ‘configurational’.

On the other hand, recent years have seen an emergence of a view that linear order is to a considerable extent independent from constituency. Such an idea is most clearly manifested in a version of HPSG, so-called linearization HPSG. In this framework, a linear sequence is analyzed in terms of a level of ‘order domains’, which is an ordered list of elements that often come from several local trees (see, e.g., Pollard et al. 1993; Reape 1994; and Kathol 2000, 2001). An important consequence of this approach is that syntactic constraints can be sensitive to linear order, not only to hierarchical structure; thus, it is possible to give a ‘linearization-based’ approach to certain syntactic phenomena.

With these two conceptions of linear organization in hand, it is important to consider what sort of analyses each approach can provide for various constructions. In this paper we will look at one specific construction, the negative inversion (NI) construction. The sentences in (1) are typical examples.

- (1) a. *Under no circumstances* will he eat raw spaghetti.

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- b. *No race* could Lewis win.
- c. *With no job* would Mary be happy.

The most plausible approach to NI constructions in a configurational approach is to analyse the initial negative expression as a sister of the rest of the clause: negative expressions can be a modifier of the rest of the clause, as in (1a), or they can be a sister of a constituent containing a gap/trace, as in (1b,c). In the latter case the relationship between the negative expression and the gap/trace is represented in terms of movement (Minimalist/Principles-and-Parameter approaches) or the SLASH feature (HPSG), in the same way as in *wh*-interrogatives (2a) and topicalization sentences (2b) (Culicover 1991; Haegeman 2000a,b; Rizzi 1997; etc).

- (2) a. *What* did they handed to the baby?
- b. *That toy*, they handed to the baby.

In the linearization framework, on the other hand, it is possible to analyze negative preposing in terms of the linear sequence, irrespective of constituency.

I will consider the possibility of providing a detailed analysis of negative preposing in NI constructions within these two views on linear order. I will argue that there is a body of data which are problematic to configurational approaches, but linearization-based HPSG can provide a fairly straightforward account of the facts.

The organization of this paper is as follows. In the next section we will outline the configurational type of approach to NI constructions, and then we will look at data that is problematic to the configurational approach. Section 3 will outline the framework of linearization-based HPSG. Section 4 presents an analysis of NI constructions in terms of linearization. Section 5 is the conclusion. *focalized*

2 Configurational approach

In much previous work it has been argued that the initial negative expression is in a specifier position of a certain functional category and establishes a spec-head configuration with a verb that moves to the head position (Culicover 1991; Haegeman 1995, 2000a,b; Haegeman and Guéron 1999; Haegeman and Zanuttini 1991; Rizzi 1996, 1997; Rizzi and Roberts 1996; and Roberts and Roussou 2002). In 2.1 we consider how this type of approach might work. 2.2 and 2.3 will then provide pieces of data which are problematic for the configurational approach.

2.1 The outline

Rizzi (1997) proposes the following articulated structure for the left periphery of clause structure.

- (3) [_{ForceP} Force⁰ [_{TopP*} Top⁰ [_{FocP} Foc⁰ [_{TopP*} Top⁰ [_{FinP} Fin⁰ [_{IP} ...

The traditional CP is first decomposed into two functional projections, ForceP and FinP: ForceP encodes the illocutionary force of the clause, and FinP is a projection

whose head carries the features for (non-)finiteness.¹ He also argues for the existence of other functional heads and projections between these two: FocP and (recursive) TopP. The specifier of FocP hosts a focalized constituent and its head hosts the focus feature. The specifier of TopP hosts the fronted topic and its head hosts a topic feature. Within this view, *wh*-questions are given something like the following analysis.

- (4) [_{FocP} which book_i [_{Foc} will_j [_{IP} you t_j read t_i]]]

The *wh*-phrase moves out of IP to the specifier of FocP. The movement of the auxiliary to Foc is then triggered by the WH-criterion, which checks a feature of the *wh*-expression with a verb in a spec-head configuration (see, e.g., Rizzi 1996, 1997; Haegeman 2000a,b).

The positioning of negative expressions and the accompanying subject-auxiliary inversion in NI are seen as parallel to the positioning of *wh*-expressions and the accompanying subject-auxiliary inversion in interrogatives. It is assumed that the initial negative expression is in [Spec,FocP] of a functional head Foc (Rizzi 1997: 317; Haegeman 2000a: 126; Haegeman 2000b: 26; see also Culicover 1991: 12, 15).² NI constructions are given something like the following representation.

- (5) [_{FocP} Not a single paper_i [_{Foc} did_j [_{IP} he t_j finish t_i on time]]]

In (5) the negative expression is in [Spec,FocP], and the auxiliary verb carrying the NEG-feature has moved to Foc⁰ to satisfy the Negative Criterion (Haegeman 1995, 2000a, 2000b; Haegeman and Zanuttini 1991; Rizzi 1996: 73–74; Rizzi 1997: 315–318).³ Thus, NI constructions are analyzed in the same way as *wh*-questions: the *wh*-phrase in (4) and the negative expression in (5) are in [Spec,FocP] and they are in a spec-head configuration with the auxiliary in Foc.

Unlike main clauses, NI constructions do not look so much like *wh*-questions in subordinate clauses. Compare the following examples.

- (6) a. * I wonder what did Robin see.
b. I said that not once had Robin raised his hand.

(6) shows that *wh*-questions do not involve subject-auxiliary inversion in subordinate clauses while NI constructions do. Since the subordinate questions are selected by a matrix predicate, the highest head of the CP domain, Force, is associated with the *wh*-feature (Culicover 1991; Rizzi 1997; Haegeman 2000a,b). In embedded *wh*-questions, therefore, the *wh*-element moves to [Spec,ForceP] to establish a spec-head relation with the *wh*-feature. This makes the auxiliary inversion unnecessary. On the other hand, the embedded NI clauses are not selected by a matrix predicate, so Force is

¹What Force really deals with is sentence type, such as declarative, interrogative, and so on (Bob Borsley, p.c.).

²Haegeman (2000a: 126) assumes that a focus feature associated with the negative expression triggers preposing.

³The Negative Criterion is defined as follows (Haegeman 2000a: 123; Haegemann 2000b: 23):

- (a) A NEG-operator must be in a Spec-Head configuration with an X-[NEG]
(b) An X-[NEG] must be in a Spect-Head configuration with a NEG operator.

not associated with the NEG feature (Haegeman 2000a: 135). As is the case for main clauses, the negative expression occupies [Spec,FocP], and the Negative Criterion triggers movement of the auxiliary to Foc⁰. The complementizer *that* can cooccur with the element in [Spec,FocP] since the former is in Force⁰.

To summarise, the configurational analysis outlined above gives a parallel analysis to main *wh*-questions and NI sentences: the initial *wh*- and negative expression occupy [Spec,FocP].

- (7) a. *Wh*-question: [_{FocP} which book_i [_{Foc} will_j [_{IP} you *t_j* read *t_i*]]]
 b. NI: [_{FocP} Not a single paper_i [_{Foc} did_j [_{IP} he *t_j* finish *t_i* on time]]]

In the following two subsections, we will look at a body of data which are problematic for this analysis.

2.2 Contrasting behaviour of *wh*- and negative expressions

The analysis outlined above predicts that initial negative expressions in NI constructions always behave like *wh*-expressions in *wh*-interrogatives. However, a body of data illustrates the contrasting behaviour of *wh*-expressions and negative expressions.

First, *wh*- and negative expressions can co-occur in main clauses, as long as the former precedes the latter.⁴

- (8) a. What under no circumstances would John do for Mary?
 b. * Under no circumstances what would John do for Mary?
 c. Where under no circumstances would John go for a holiday?
 d. * Under no circumstances where would John go for a holiday?

The assumption that they are in a single position [Spec,Foc] leads to the prediction that they should not co-occur (Haegeman 2000a: 134; Haegeman 2000b: 46). This is not borne out, however, as the examples cited above illustrate.⁵

Second, the unbounded extraction of *wh*-phrases is grammatical, but unbounded extraction of a negative phrase is unacceptable for many speakers (Sobin 2003: 184–185). Let us consider the pair in (9).

- (9) a. *What* did Bill say that Mary remembered to bring.
 b. ?? *Not a penny* did I say that Mary remembered to bring. (Sobin 2003: 185)

⁴I would like to thank Bob Borsley and Neal Snape for the grammaticality judgements of these sentences.

⁵Haegeman (2000a,b) cites the following examples as evidence that the *wh*-phrase and the negative expression compete for the same position [Spec,FocP]. However, my informants do not find the (b) examples ungrammatical.

- (i) a. * In no way, why would Robin volunteer?
 b. * Why, in no way would Robin volunteer? (Haegeman 2000a: 134)
 (ii) a. * On no account where should I go?
 b. * Where on no account should I go? (Haegeman 2000b: 46)

The sentences in (9) are the same except for the initial elements, which are extracted out of the embedded clause. The unbounded extraction of *wh*-phrases, as in (9a), is grammatical, but as (9b) illustrates, the unbounded extraction of a negative phrase is very difficult. If *wh*-interrogatives and NI constructions have parallel analysis, the sentences in (9) should elicit similar judgements. However, this is not the case. The pair in (10) illustrates the same point.

- (10) a. I said [that *never again* will Mary eat clams].
 b. *Never again* did I say [that Mary will eat clams]. (Sobin 2003: 184)

If the unbounded extraction of a negative expression were grammatical, (10b) should be able to have the same meaning as (10a). However, this is not the case.

These pieces of data show that there is no reason to think that negative preposing in NI should be given a parallel analysis with *wh*-fronting, and that the configurational analysis of NI outlined in section 2.1 is dubious. This suggests that an alternative analysis is needed in which NI sentences and *wh*-interrogatives are treated rather differently.

2.3 Information structure in NI

We saw above that in the configurational approach, the initial negative expression in NI occupies the specifier position of a functional head *Foc*. Many proponents of this approach assume that the preposed element in the sentences of the following type occupies the same position (Culicover 1991; Rizzi 1997; Haegeman 2000a,b).

- (11) To ROBIN I gave a book. (Culicover 1991: 34)

The preposed element with focus stress (in capitals) is assumed to be in the [Spec,*FocP*] position. It is important to note the fact that (11) can be used to answer the question (12a), but cannot be used to answer (12b).

- (12) a. To whom did you give a book?
 b. What happened?

The question in (12a) requires an answer with constituent focus on a recipient PP, and (12b) requires an answer with the whole-sentence focus. The fact that (11) can only answer (12a) indicates that the initial constituent in [Spec,*FocP*] is the only possible scope of focus.

If the initial negative expression in NI sentences occupies the position [Spec,*FocP*], it is expected to have the same scope of focus as the preposed element in (11). The following data, cited by Culicover (1991: 34) and Haegeman (2000b: 34), might appear to give evidence to this.

- (13) a. Did you see anyone?
 b. No, *not a single person* did I see. (Culicover 1991: 34)

An answer to a *yes-no* question serves as a test for focushood of a constituent (e.g., Chomsky 1971; Jackendoff 1972; Rochemont 1986). The fact that an NI sentence serves as an answer for the *yes-no* question (13a) indicates that the initial negative expression is focused and has new information.

However, there is also evidence that NI sentences as a whole can convey new information (Sobin 2003: 205ff). Let us consider the following examples from Sobin (2003: 206).

- (14) a. * Because never again will I endure such a speech, I left.
 b. I left because never again will I endure such a speech
 c. * That rarely does Mary eat seafood will surprise everyone.
 d. It will surprise everyone that rarely does Mary eat seafood.
 e. * That never again would Mary eat seafood was inferred by everyone.
 f. Everyone inferred that never again would Mary eat seafood.
 g. * Since never does Mary eat seafood, Bill served chicken.
 h. (?) Bill served chicken, since never does Mary eat seafood.

In English, an element with new information normally follows old information. Thus, if a subordinate clause comes before a main clause, it means that the subordinate clause is associated with old information; if a subordinate clause comes after the main clause, it means that the subordinate clause provides new information. In ungrammatical sentences in (14a,c,e,g), an embedded NI clause comes before a main clause. The ungrammaticality of these sentences is due to the fact that an NI construction is not compatible with an old information position. In the sentences in (14b,d,f,h), an NI clause is in a new information position. They are grammatical since NI constructions convey new information.

To summarise, NI sentences are ambiguous with respect to the domain of focus: they have either a narrow focus on the initial negative expression as in (13b), or a wide focus on the whole sentence as in (14b,d,f,h). This fact is problematic for the configurational approach since it predicts that only the constituent in [Spec,FocP] is focused; it does not predict the wide focus pattern.

2.4 Preposing of preverbal adverbials

There is another problem for the assumption that both the initial negative expression in NI and the preposed focus as in (11) occupy the specifier position of a functional head Foc.

The following pair might appear to show that the adverb *never* moves to the [Spec,Foc] position from the preverbal position in NI constructions.

- (15) a. I *have never* seen a ghost.
 b. *Never* have I seen a ghost.

If the movement from the preverbal position to [Spec,Foc] were possible, nothing would prevent other preverbal adverbs, such as *merely* and *almost* in (16), from moving to the same position, in the form of focus movement as in (11).

- (16) a. Kim *merely* opened the door.
 b. Kim *almost* found the solution.

(17) shows, however, that preverbal adverbs cannot be preposed (Jackendoff 1972; Bouma et al. 2001; Kim and Sag 2002).

- (17) a. * *Merely* Kim opened the door. (Kim and Sag 2002: 386)
 b. * *Almost* Kim found the solution. (Adapted from Bouma et al. 2001: 45)

This contrasting behaviour of *never* and other preverbal adverbials means that the assumption that both the initial negative expression in NI and the preposed focus move to [Spec,FocP] is problematic.

3 Theoretical assumptions

The analysis to be presented below will assume a version of HPSG. In HPSG, signs, which include words and phrases, are represented as a complex of syntactic, semantic and phonological information. Well-formed phrases are licensed by immediate dominance (ID) schemata. Constituent structure is represented as a value of the DAUGHTERS (DTRS) attribute.

The version of HPSG assumed here, however, departs from standard HPSG with respect to linear representation. In the version adopted here, linear order is independent from constituency. In the rest of this section we will outline the fundamental assumptions of this framework, which is often referred to as ‘linearization-based HPSG’.

3.1 Order domains

In standard HPSG, linear order is represented as a property of the phonology of a phrase, computed from that of its daughters. In the framework adopted here, however, linear order is determined in a level of ‘order domains’. This is an ordered list of elements that contain at least phonological and categorical information (see, e.g., Pollard et al. 1993; Reape 1994; and Kathol 2000, 2001). The list may include elements from several local trees. Order domains are given as the value of the attribute $DOM(AIN)$. At each level of syntactic combination, phonological and categorical information of the daughter may form a single domain element in the order domain of the mother or the elements of the daughter’s order domain may just become elements in the mother’s order domain. For example, let us consider the composition of an English inverted clause (18), given in Figure 1 (Borsley and Kathol 2000).

- (18) Is the girl coming?

We assume that the combination of a head with a phrasal argument or filler will give rise to a new domain in which the argument or filler is compacted and inserted as a single element into the mother’s domain. The VP *is coming* has two daughters and its domain contains two elements, one for *is* and one for *coming*. The top S node also has two daughters, but its order domain contains three elements. This is because the VP’s domain elements have just become elements in the S’s order domain, whereas the NP is compacted into one single domain element, which ensures the continuity of the NP. Discontinuity is allowed if the domain elements are not compacted: *is* and *coming* are discontinuous in the order domain of the S.

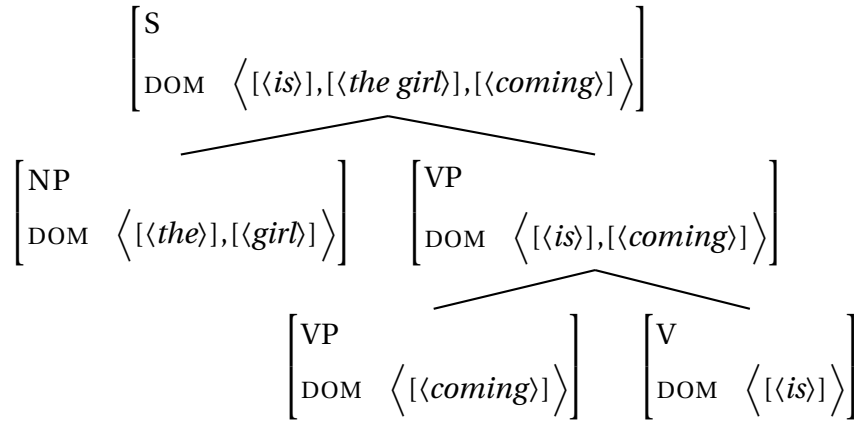


Figure 1: Structure for (18)

3.2 Position classes

We further assume that each element of a clausal order domain is uniquely marked for the region that it belongs to (Kathol 2000; see also Borsley and Kathol 2000; Chung and Kim 2003; Kathol 2002; and Penn 1999).⁶ In our approach, the positioning of an element in a particular region is encoded as *first* through *fifth* on that element. There is a total order on these positional classes, enforced by the linear precedence (LP) constraint in (19).

$$(19) \text{ first} < \text{second} < \text{third} < \text{fourth} < \text{fifth}$$

The top S node of Figure 1, for example, has a more elaborated representation for its order domain, which is something like the following.

$$(20) \left[\text{DOM} \left\langle \left[\begin{array}{l} \text{second} \\ \langle is \rangle \end{array} \right], \left[\begin{array}{l} \text{third} \\ \langle the \text{ girl} \rangle \end{array} \right], \left[\begin{array}{l} \text{fourth} \\ \langle coming \rangle \end{array} \right] \right\rangle \right]$$

The finite copula verb *is* is in *second* position when it is inverted. The non-finite verb *coming* is assigned to *fourth*. We assume that subjects in general are assigned to *third* position. We will introduce constraints determining the position of elements in order domains in 3.3.

3.3 Constructional Constraints

In order to formulate generalizations about the shared properties of diverse expressions, the version of HPSG assumed here includes a cross-classifying multidimensional hierarchy of constructional types with associated constraints, following the recent development of HPSG (Ginzburg and Sag 2000; Green and Morgan 1996; Kathol 2000, 2001, 2002; Kim and Sag 2002; Sag 1997); each type inherits constraints from its super-types. In Kathol's version, clausal expressions are classified with respect to two dimensions: 'internal syntax' and 'clausality', which will be adopted in this study.

⁶In the case of German, this partitioning of the clausal domain directly encodes the notion of traditional German grammar of 'topological fields'. See Kathol (2000) for details.

The internal syntax dimension is related to the placement of the finite verbal head in linear structure. The constraints are organized as in Figure 2.⁷

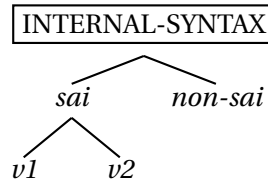


Figure 2: Classification of English clauses in terms of their internal syntax

Each type of clause in English is first of all classified according to whether or not they involve subject-auxiliary inversion. A clause of the type *subject-auxiliary-inversion* (*sai*) satisfies constraint (21).

$$(21) \quad sai \rightarrow \left[\begin{array}{c} S[fin] \\ \text{DOM} \left\langle \dots, \left[\begin{array}{c} \textit{second} \\ V[fin] \\ \text{AUX} \quad + \end{array} \right], \dots \right\rangle \end{array} \right] \quad (\text{Kathol 2002; cf. Kathol 2001: 57})$$

(21) states that a clause of the type *sai* is a finite clause and its second position is filled by auxiliary finite verb. The specification that the second element is an auxiliary verb is justified by the ungrammaticality of sentences such as the following, in which the second element is a finite non-auxiliary verb.

- (22) a. *At no time went John to London.
b. *Where went John?

Each subtype of clause of the type *sai* is classified according to whether or not it includes a particular kind of element in *first* position. A *v1* clause does not include such an element, while a *v2* clause does, constrained by the following constraint.

⁷The classification in Figure 2 is different from the one proposed by Kathol (2000, 2001) for German clauses: he classifies each type of the clause first as root-clause or subordinate-clause. In German the positioning of the finite verb is largely correlated with the root/subordinate distinction: the verb-second placement is restricted to root clauses. In English, however, there is no such strict correlation since the verb-second order can occur in the subordinate clause as well as in the root clause.

- (i) a. Gestern hat er ihn gesehen.
b. *Er ihn gestern gesehen hat.
(ii) a. *...dass gestern hat er ihn gesehen.
b. ...dass er ihn gestern gesehen hat.
(iii) a. Never again will Mary eat clams.
b. *Never again Mary will eat clams.
(iv) a. I said that never again will Mary eat clams.
b. *I said that never again Mary will eat clams.

$$(23) \quad v2 \rightarrow \left[\text{DOM} \left\langle [first], \dots \right\rangle \right] \quad (\text{Kathol 2000: 147})$$

(23) states that a $v2$ clause has a domain element which is assigned to *first* position.

In the dimension of ‘clausality’, clauses are classified in terms of their semantics; i.e., sentence modes such as declarative, interrogative, and imperative. The constraints are organized as in Figure 3.

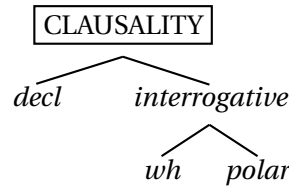


Figure 3: Classification of English clauses in terms of their clausality

Each type of clause in English is first of all classified depending on whether it is interrogative or declarative. The former is further classified into *wh*-interrogative and polar interrogative. Clauses of the latter type, *decl*, are constrained by (24).

$$(24) \quad decl \rightarrow \left[\text{CONT} \quad \textit{proposition} \right] \quad (\text{Kathol 2001: 59})$$

Following Kathol (2000, 2001, 2002), each maximal clausal type inherits both from an ‘internal syntax’ type and from a ‘clausality’ type (see also Sag 1997 and Ginzburg and Sag 2000). Thus, a clause type $v2\text{-decl}$ is a subtype of both *decl* and $v2$.

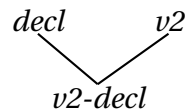


Figure 4: Multiple inheritance from *decl* and $v2$

In addition to all the constraints imposed on its supertypes *decl* and $v2$, a clause of the $v2\text{-decl}$ type satisfies the following constraint.

$$(25) \quad v2decl \rightarrow \left[\text{DOM} \left\langle \left[\begin{array}{l} first \\ WH \quad \{ \} \end{array} \right], \dots \right\rangle \right] \quad (\text{Kathol 2001: 59})$$

(25) states that a $v2\text{-decl}$ clause does not have a *wh*-expression in *first* position.

4 A linearization approach to NI

We now return to the English NI constructions and show how they can be analyzed within linearization-based HPSG.

4.1 Constraints for NI constructions

We argued in section 3.3 that the type *v2-decl* is a subtype of both *v2* and *decl* (Figure 4). *V2-decl* in turn has a number of subtypes, including those listed below.

- (26) a. So slowly did the workmen get on with their work that they were dismissed.
(Hawkins 1986: 169)
- b. Abby can play more instruments than can her father. (Merchant 2003)
- c. When Bill smokes, all the more does Susan hate him.
- d. ? The more Bill smokes, the more does Susan hate him.
(c and d from Culicover and Jackendoff 2005: 515)

We assume that NI constructions are among those subtypes of *v2-decl*, as shown in Figure 5.

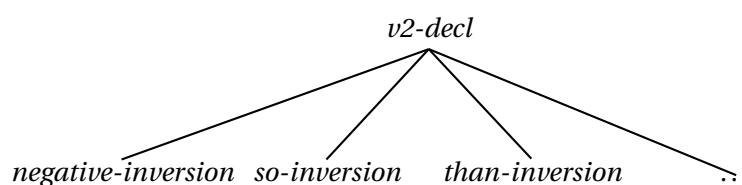


Figure 5: Subtypes of *v2-decl*

These subtypes are classified according to what kind of element occupies *first* position. A *negative-inversion* clause satisfies the constraint in (27), in addition to all the constraints imposed on its supertype *v2-decl*.

$$(27) \text{ negative-inversion} \rightarrow \left[\text{DOM} \left\langle \left[\begin{array}{l} \textit{first} \\ \text{STORE} \end{array} \left\{ \textit{neg-quant} \right\} \right] \dots \right\rangle \right]$$

This constraint states that a clause of the type *negative-inversion* has a negative quantifier in storage in the expression in *first* position.⁸

For example, an NI sentence (28) is given the structure in Figure 6.

- (28) *On no account* will I write a paper.

The non-finite verb *write* is combined with the object NP *a paper* and the PP *on no account* to form a VP.⁹ The resulting VP combines with the finite auxiliary verb *will* to form the highest VP, which in turn is combined with the subject *I*. Each domain element occupies the appropriate position in the order domains according to the constraints given in section 3. Of significance here is that the negative expression *on no account* is a sister of the non-finite verb in the constituent structure. Although it is in such a low position on the tree, it is assigned to *first* position in the order domain of the top S due to constraint (27). The initial placement of a negative expression in NI sentences is thus dealt with here as a linearization phenomenon in a clausal order domain.

⁸Following de Swart and Sag (2002) we assume that negative expressions are quantifiers.

⁹Here adjuncts are assumed to be complements (See, e.g., Abeillé and Godard 1997; Bouma et al. 2001; Kim and Sag 2002; van Noord and Bouma 1994; PrzepiŹrkowski 1999a, 1999b).

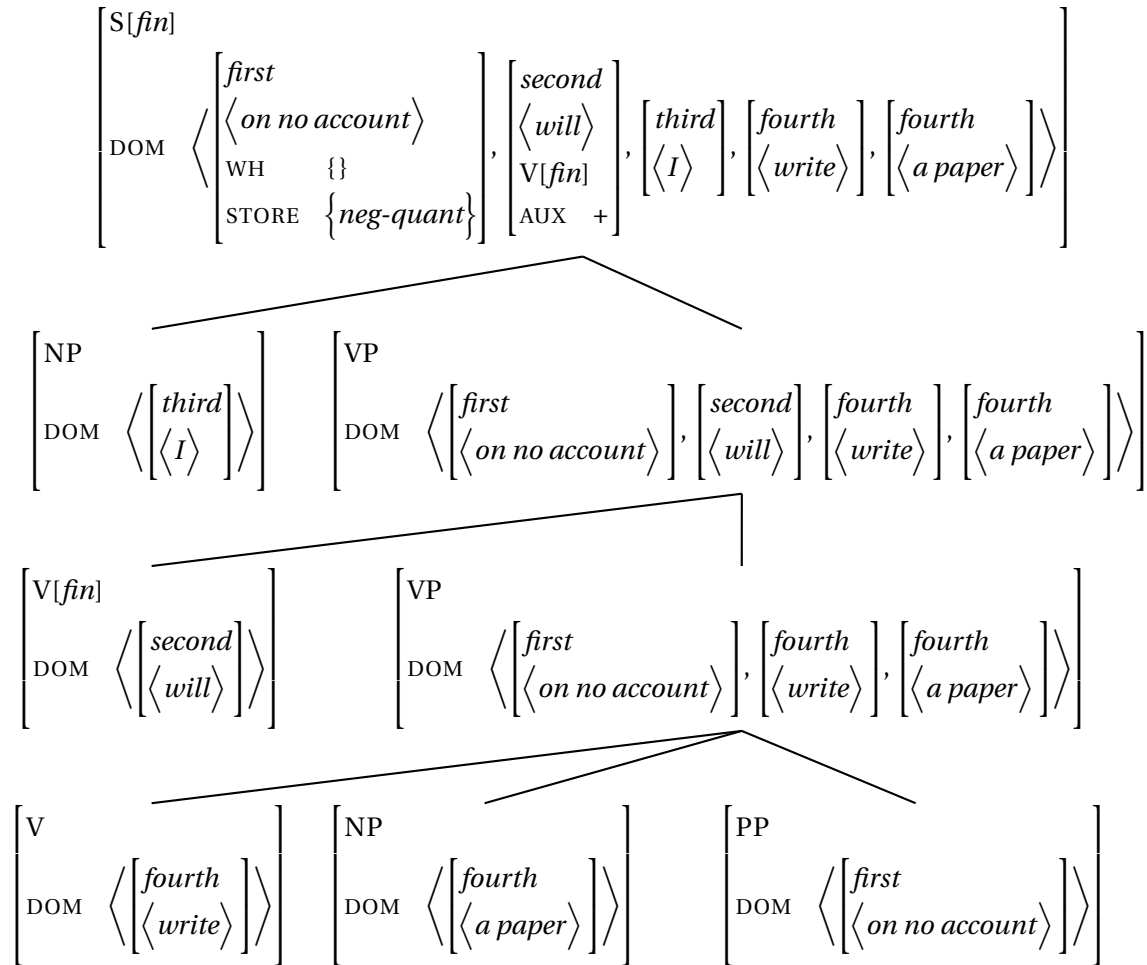


Figure 6: Structure for (28)

4.2 An account of the facts

We will now look at how the constraints introduced above can accommodate the properties of the NI construction outlined in sections 2.2 to 2.4, which are problematic for the configurational analysis.

4.2.1 Clause-boundness

In our treatment of NI sentences, the positioning of negative expressions is determined in clausal order domains. This means that NI sentences follow the general properties of clausal order domains. As discussed earlier, an embedded clause is totally compacted when it is combined with the higher clause. This captures the fact that negative preposing in NI is clause-bound (9-10).

Our analysis of this phenomenon is shown in Figure 7. The NI clause is compacted at the point where it combines with the complementizer *that*. Since the NI clause constitutes a single domain element in the upper S, the negative expression *never again* cannot be extracted out of it.

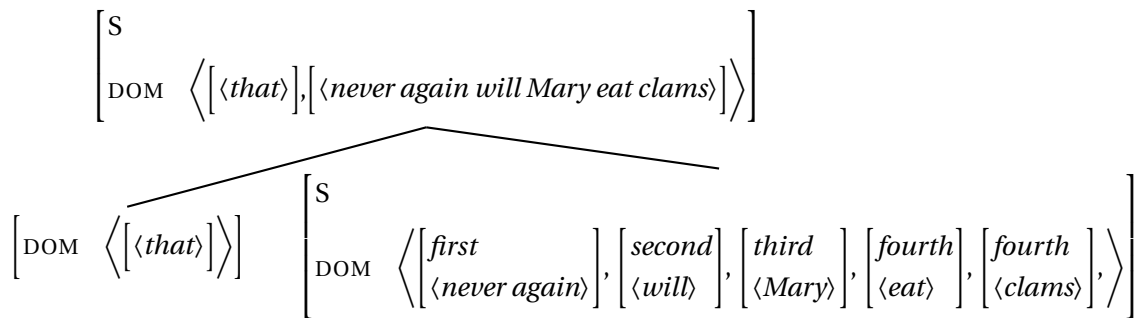


Figure 7: Total compaction of an embedded clause

4.2.2 Co-occurrence of a *wh*- and negative expression

Let us turn to the next set of data problematic for the configurational analysis discussed in section 2.2. The data in (8) shows that the fronted *wh*-element and negative expression do not show a complementary distribution.

This fact would be surprising if the fronted *wh*-element and negative expression occupied one and the same position, as the configurational analysis assumes.

Here we must draw attention to one of the differences between German and English: only one element is allowed in the initial position in German verb-second clauses while more than one element is allowed in English counterparts. The examples in (29), cited from Hawkins (1985: 166), show the German cases; (29a) is ungrammatical since it contains two elements before the finite verb.

- (29) a. * Gestern das Auto verkaufte Fritz an einen Händler.
 yesterday the car sold Fritz to a dealer
 b. Gestern verkaufte Fritz das Auto an einen Händler.
 yesterday sold Fritz the car to a dealer
 c. Das Auto verkaufte Fritz gestern an einen Händler.
 the car sold Fritz yesterday to a dealer

In English, on the other hand, it is possible to have two elements before the finite verb, as illustrated by examples in (8) above. We will capture this difference between the two languages by cardinality conditions on the *first* and *second* positions. The LP statements in (30a) ensure that in a given domain in German, only a single element may occupy *first* and *second*, respectively. We assume that a cardinality condition is imposed only on *second* position in English and there is no such condition on *first*. The LP statement (30b) is for English.

- (30) a. German
 i. *first* < *first*
 ii. *second* < *second*
 b. English
second < *second*

The absence of cardinality condition on *first* means that more than one element can occupy this position in English. (8a) is represented as in (31).

$$(31) \left[\text{DOM} \left\langle \left[\begin{array}{l} \textit{first} \\ \langle \textit{what} \rangle \end{array} \right], \left[\begin{array}{l} \textit{first} \\ \langle \textit{under no} \\ \textit{circumstances} \rangle \end{array} \right], \left[\begin{array}{l} \textit{second} \\ \langle \textit{would} \rangle \end{array} \right], \left[\begin{array}{l} \textit{third} \\ \langle \textit{John} \rangle \end{array} \right], \left[\begin{array}{l} \textit{fourth} \\ \langle \textit{do} \rangle \end{array} \right], \left[\begin{array}{l} \textit{fourth} \\ \langle \textit{for Mary} \rangle \end{array} \right] \right\rangle \right]$$

In the clausal order domain in (31), *what* and *under no circumstances* are both in position *first*. This is allowed since there is no cardinality restriction on *first*. We assume that an LP rule ensures that a *wh*-phrase precedes a negative phrase.

4.2.3 Information structure of NI

We now turn to the ambiguity of NI sentences discussed in 2.3: they may have a narrow focus on the initial negative expression as in (13b), or they may have a wide focus on the whole sentence as in (14b,d,f,h). We argued that the configurational approach can capture only the narrow focus pattern.

In the present approach this ambiguity can be accommodated quite easily. We propose the following as an additional constraint on the *negative-inversion* type.

$$(32) \textit{negative-inversion} \rightarrow \left(\left[\begin{array}{l} \text{SYNSEM|CONT} \quad \boxed{1} \\ \text{INFO-STR|FOC} \quad \boxed{1} \end{array} \right] \vee \left[\begin{array}{l} \text{DOM} \left\langle \left[\begin{array}{l} \textit{first} \\ \text{SYNSEM|CONT} \quad \boxed{1} \end{array} \right], \dots \right\rangle \\ \text{INFO-STR|FOC} \quad \boxed{1} \end{array} \right] \right)$$

(32) states that the FOC value of *negative-inversion* is structure-shared with either the CONT value of the sign or the CONT value of the domain element in *first* position. Here it is assumed that a sign has information structure, which is represented as a value of its INFO(RMATION)-STR(UCTURE).¹⁰ Its feature geometry reflects a focus-background structure of a sign. We assume, following Engdahl (1999: 186–187), that each of those features takes *content* objects (i.e., values of the CONT feature) as its value.¹¹ The FOC(US) feature is among those appropriate for INFO-STR, and its value is structure-shared with the FOC value of the focused part of the sign. The first disjunct of constraint (32) captures the wide focus pattern in (14b,d,f,h), and the second disjunct accommodates the narrow focus pattern in (13b).

4.2.4 Preposing of preverbal adverbials

As we saw in 2.4, preverbal adverbials cannot be preposed, as illustrated by (33), but (34) shows that *never* can be in the initial position of an NI sentence.

- (33) a. (**Merely*) Kim (merely) opened the door.
 b. (**Almost*) Kim (almost) found the solution.
 c. (**Never*) I have (never) seen a ghost.

(34) *Never* have I seen a ghost.

¹⁰See Engdahl and Vallduví(1996), Alexopoulou and Kolliakou (2002), De Kuthy (2002), and De Kuthy and Meurers (2003).

¹¹See also De Kuthy (2002: 162) and De Kuthy and Meurers (2003: 103).

Recall that our analysis of NI sentences does not include any specification about the status of the negative expressions in constituent structure. *Never* is a negative adverbial and constraint (27) allows it to be in the initial position in the order domain of the NI sentence. The constituent structure and order domain of (34) are provided in Figure 8. The preverbal adverb *never* combines with the VP *seen a ghost* as ordinary preverbal adverbials. Due to its positional assignment, it occurs in the initial position in the order domain of the top S.

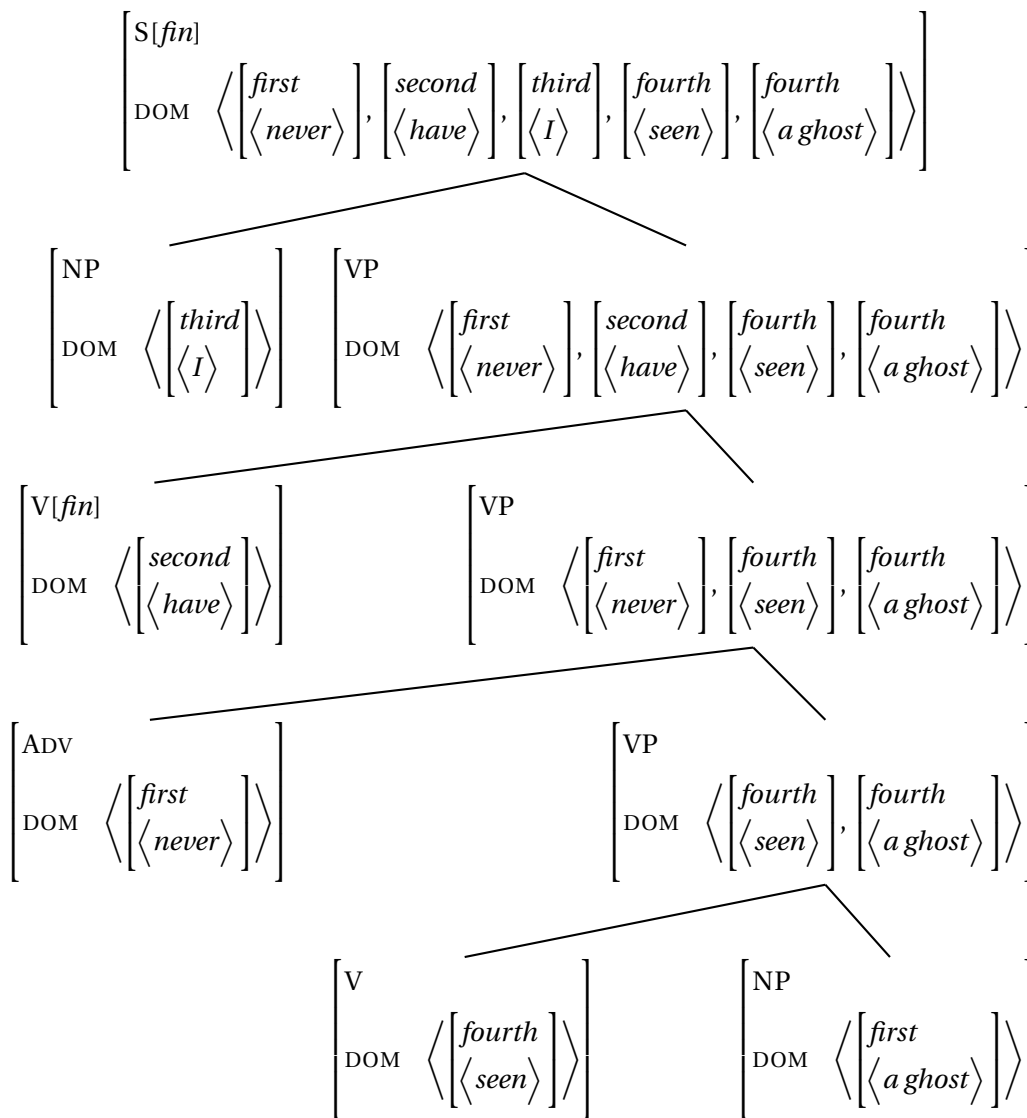


Figure 8: Structure for (34)

4.3 Other facts

In this subsection we will see that the present proposal is compatible with other facts of NI sentences.

4.3.1 Sentential negation

Our approach can accommodate the well-known fact that NI sentences always have a sentential negation (Klima 1964: 271ff, 306ff; Haegeman 1995: 72ff, 2000a,b; Rudanko 1982). This property will become clear if we compare NI sentences with sentences with constituent negation. First, the NI sentence in (35a) admits *neither* tags, while the constituent negation sentence in (35b) does not.

- (35) a. *Not often* does Jack attend parties and neither does Jill.
 b. * *Not long ago* Jack attend a party and neither did Jill. (Rudanko 1982: 350)

Second, the NI sentence in (36a) takes non-negative tags, while the constituent negation sentence (36b) takes negative tags.

- (36) a. *Not often* does Jack attend parties, does he/*doesn't he?
 b. *Not long ago* Jack attended a party, didn't he/*did he? (Rudanko 1982: 350)

Third, the initial negative expression *not often* in the NI sentence in (37a) license the negative polarity item *any*. (37b) shows that the constituent negation does not license *any*.

- (37) a. *Not often* does Jack attend any parties.
 b. * *Not long ago* Jack attended any parties. (Rudanko 1982: 350)

Fourth, the NI sentence cannot be coordinated with tags introduced by *so*, while the constituent negation sentence can.

- (38) a. * *Not often* does Jack attend parties, and so does Bill.
 b. *Not long ago* John bought a house, and so did Bill. (Haegeman 1995: 73)

These pieces of data show that NI sentences have a sentential negation.

We can formalise the requirement of sentential negation in NI as an additional constraint to the type *negative-inversion*.

$$(39) \text{ negative-inversion} \rightarrow \left[\begin{array}{l} \text{QUANTS} \quad \langle \boxed{1} \rangle \\ \text{STORE} \quad \{ \} \\ \text{DOM} \quad \left\langle \left[\begin{array}{l} \textit{first} \\ \text{STORE} \quad \{ \boxed{1} \textit{neg-quant} \} \end{array} \right] \dots \right\rangle \end{array} \right]$$

(39) states that in a *negative-inversion* clause, the negative quantifier in storage in the initial negative expression should be structure-shared with one of the elements in the QUANTS list at the immediately containing clause.¹²

¹²This constraint is compatible with quantifier retrieval either at lexical or phrasal level.

4.3.2 NI with the conjunction *nor*

As illustrated by (40), the initial negative expression in NI constructions can be the conjunction *nor*.

- (40) a. Mary neither spends her vacations at the seashore *nor* does she go to the mountains. (Culicover 1999: 55)
 b. He did not receive any assistance from the authorities *nor* did he believe their assurance that action would soon be taken.
 c. The house could hardly be called red, *nor* was brown the right word.
 d. The little creature cried and laid down, *nor* could all our breathing raise it.
 e. I remained silent, *nor* did he speak a single word.

((b-e) from Mazzon 2004: 104–105)

The configurational analysis assumes that the initial negative expression in NI is in [Spec,FocP]. As a conjunction, however, *nor* is not involved in an unbounded dependency relation. Therefore it would be difficult to assimilate it to *wh*-expressions, which are always in an unbounded dependency relation.

In our treatment of NI sentences outlined in section 4.1, the initial positioning of negative expressions is constrained only in terms of the linear sequence. This means that there is no specification about the status of the negative expressions in constituent structure. Another feature of our treatment of NI is that there are just a few constraints on the internal property of the initial negative element: (25) stating that it should not contain a *wh*-expression and (27) stating that it should contain a negative expression. Other aspects of the internal structure are underspecified. This means that any syntactic category can in principle be allowed in the *first* position in NI. For example, (1a) contains an adverbial phrase, (1b) an NP and (1c) a PP.

The absence of any restriction on constituency and the underspecification of the internal structure allow the occurrence of *nor* in position *first* as in (40), although it is a conjunction and is not involved in an unbounded dependency relation. The *nor*-clause in (40a) is given the following order domain representation.

$$(41) \left[\text{DOM} \left\langle \left[\begin{array}{l} \textit{first} \\ \langle \textit{nor} \rangle \end{array} \right], \left[\begin{array}{l} \textit{second} \\ \langle \textit{does} \rangle \end{array} \right], \left[\begin{array}{l} \textit{third} \\ \langle \textit{she} \rangle \end{array} \right], \left[\begin{array}{l} \textit{fourth} \\ \langle \textit{go} \rangle \end{array} \right], \left[\begin{array}{l} \textit{fourth} \\ \langle \textit{to the mountains} \rangle \end{array} \right] \right\rangle \right]$$

The conjunction *nor* is a negative expression, so constraint (27) licenses its occurrence in *first* position of the clausal domain, in whatever fashion it combines with the rest of the clause in constituent structure.^{13,14}

¹³We will not discuss the combinatorial relation between the conjunction *nor* and the rest of the clause in constituent structure since it is of little importance to the discussion in the present paper.

¹⁴It is assumed that the clause after *nor* is uncompacted although other conjunctions are different in this respect.

5 Summary and concluding remarks

Let us summarise the present study. We first looked at how the configurational analysis within Minimalism/Principles and Parameters theory deals with NI constructions, and then provided some pieces of data that are problematic to the approach. After introducing the theoretical framework of linearization-based HPSG in section 3, we provided the linearization-based approach to NI in section 4. In 4.1 we proposed that NI sentences are of the clause type *negative-inversion*, and that it is a subtype of a type *v2-decl*, which in turn is a subtype of both *v2* and *decl*. Thus NI sentences should satisfy all the constraints on these clause types. Of considerable importance here is that these constraints concern just the sentence type and the internal syntax of the clause, so NI does not impose any restriction on constituent structure. The initial placement of a negative expression is thus treated as a linearization phenomenon in a clausal order domain.¹⁵ 4.2 showed that this approach can accommodate all the problematic data to the configurational approach.¹⁶

The present analysis accommodates not just the construction-specific properties of NI sentences but also the regularities that they share with other constructions. The use of hierarchically organized network of clausal types allows us to have constraints of any level of generality. The present approach can thus capture the distinctive properties of NI sentences without missing any generalizations.

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¹⁵Culicover (1999: 162–165) suggests that NI should be analyzed in terms of the linear sequence, but he does not offer an actual analysis.

¹⁶The present approach is somewhat similar to Sobin's (2003) analysis within Minimalism in that the initial positioning of the negative expression does not involve an unbounded dependency. Sobin (2003) posits the clause structure shown in (i), which includes a simpler CP layer. The negative expression associated with NI constructions is located in [Spec,NegP]. Thus, an NI construction is given an analysis such as (ii). There is no attraction of the verb to the negative expression (i.e., no Negative Criterion). The apparent inversion is impeded movement where the elements involved (verb and subject) fail to arrive at the normal declarative surface positions. In this approach, [Spec,AgrP] in NI constructions is empty, which violates the Extended Projection Principle. Sobin provides a couple of possible solutions, but the mechanisms involved require further development.

- (i) [CP ... [AgrP ... [NegP ... [TP ... [VP ...
- (ii) [CP [AgrP [NegP never again [Neg \emptyset Neg] [TP [T will] [VP he [_{V'} ...

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