Unbounded Negative Concord in Polish: A Lexicalist HPSG Approach

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Abstract

In this paper, we deal with Negative Concord (NC) in Polish. We show that Polish NC is a kind of unbounded dependency construction (UDC), although it differs in many respects from the 'standard' UDCs such as, e.g., *wh*-extraction or topicalization. Our analysis of NC is coached in the theoretical framework of HPSG; more precisely, we adopt a lexicalist approach to UDCs proposed by Sag (1996a, 1996b). Moreover, we argue that Polish NC facts would be difficult to model by a purely semantic account.

1 Introduction

The aim of this paper is twofold. First, on the basis of facts rarely (if ever) considered in the linguistic literature, we argue for the Unbounded Dependency (UD) status of Negative Concord (NC) in Polish (and, by extension, possibly in other languages exhibiting NC). Secondly, we provide a formal HPSG analysis of the facts considered utilizing recent approaches to Unbounded Dependency Constructions (UDCs) advocated for, e.g., by Sag (1996a, 1996b). Our choice of linguistic formalism (HPSG) and the degree of formalization achieved make the account in principle computer-implementable.[1]

Negative Concord is infamous for its cross-linguistic diversity. Slavic NC contrasts with that of other languages described in the literature.[2] Section 2 presents the basic data of Polish NC; section 3 shows that NC is unbounded, although it differs in important respects from 'everyday' UDCs such as *wh*-extraction and topicalization; section 4 presents the lexical approach to UDCs which constitutes the

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[1]See Bolc, Czuba, Kupść, Marciniak, Mykowiecka, and Przepiórkowski (1996) for a survey of computational formalisms for implementing HPSG grammars.

[2]See, e.g., Rizzi (1982), Zanuttini (1991) and Aranovich (1993) for Romance, and Labov (1972), den Besten (1986), Bayer (1990) and Haegeman and Zanuttini (1996) for Germanic. On the other hand, Progovac (1993, 1994) provides data from Serbo-Croatian (involving NI-NPIs in her terminology) which parallel those described in section 2, although she does not consider the unbounded aspect of NC.

basis of our analysis; and section 5 presents a detailed account of the facts described in preceding sections. In section 6 we briefly consider viability of a purely semantic approach and, finally, section 7 contains some concluding remarks.

2 Negative Concord in Polish

Polish shows both kinds of NC described in the literature, i.e., *negative doubling* and *negative spread* (cf. den Besten (1986), van der Wouden and Zwarts (1993)). We describe these species of NC below, and then move to show that licensing conditions on Polish *n*-words[3] differ from those on English Negative Polarity Items (NPIs; e.g., *any* and *ever*) or Italian *n*-words.

2.1 Negative Doubling

In Polish, sentential negation is expressed by the negative affix *nie*:[4]

(1) *Janek* ***nie*** *pomaga ojcu.*
John not helps father
'John doesn't help his father.'

Whenever any dependent of a verb, be it a subject (2a), an object (2b–c) or an adjunct (3), is a negative phrase (is or contains an *n*-word), the verb has to be preceded by the negation marker *nie*.

(2) a. ***Nikt*** ****(nie)*** *przyszedł.*
nobody not came
'Nobody came.'

b. *Marysia* ***niczego*** ****(nie)*** *dała Jankowi.*
Mary nothing not gave John
'Mary didn't give John anything.'

c. *Marysia* ****(nie)*** *dała* ***nikomu*** *książki.*
Mary not gave nobody book
'Mary didn't give anyone a/the book'.

(3) a. ***Nigdy*** ****(nie)*** *prosił o pomoc.*
never not asked-he about help
'He never asked for help.'

b. *Z* ***nikim*** ****(nie)*** *przechadzałem się wczoraj po Hradčanach.*
with nobody not strolled-I SELF yesterday on Hradčany
'I didn't stroll with anybody at Hradčany yesterday'.

[3] The term *n-word* was coined by—to the best of our knowledge—Laka (1990) and it has been used in much of subsequent literature on NC. It denotes those words (usually starting with the letter *n*) which enter the NC relation with the verbal negation marker (in case of *negative doubling*) or with each other (in case of *negative spread*).

[4] We argue (contra orthography) for the affix status of *nie* in Kupść and Przepiórkowski (1997).

Note that, unlike in, e.g., Italian, negative doubling does not depend in Polish on word order: preverbal negative phrases require verbal negation marker *nie* just as the postverbal ones do.

2.2 Negative Spread

Apart from negative doubling, Polish exhibits also negative spread. As the example below attests, the presence of multiple negative phrases within a clause results in a single negation meaning:

(4) ***Nikt*** ***nigdy*** ***nikogo*** ***niczym*** **(nie) uszczęśliwił.*
Nobody$_{nom}$ never nobody$_{gen}$ nothing$_{ins}$ not made happy

'Nobody has ever made anybody happy with anything.'

2.3 Licensing *N*-Words

Section 2.1 above showed that, in Polish, *n*-words require the presence of clausemate verbal negation, or, in other words, that *nie* licenses *n*-words. In many languages, including English and Italian, NPIs[5] can be licensed by a variety of environments, often characterized in semantic terms (e.g., Ladusaw (1979), van der Wouden and Zwarts (1993), Dowty (1994)). We show below that none of those NPI-licensing environments can license Polish *n*-words.[6]

Yes/no questions:

(5) * *Czy* ***nikt*** *dzwonił?*
Q nobody phoned

'Has anybody phoned?'

Indirect questions:

(6) * *Chciał wiedzieć, czy* ***nikt*** *dzwonił.*
wanted-he know, Q nobody phoned

'He wanted to know if anybody phoned.'

Adversative predicates:

(7) * *Wątpię, żeby* ***nikt*** *dzwonił.*
doubt-I that$_{subj}$ nobody phoned

'I doubt if anybody phoned.'

Antecedents of conditionals:

[5] We implicitly assume here that Polish *n*-words should be considered Negative Polarity Items, i.e., existential quantifiers which get their negative import from the licensing operators. The matter is, however, far from clear (see, e.g., discussion of Romance *n*-words in Laka (1990) and Zanuttini (1991)) but, fortunately, nothing hinges on this assumption.

[6] See, however, section 5 for another licensor of *n*-words.

(8) * *Jeżeli* ***nikt*** *dzwonił, to...*
if nobody phoned then
'If anybody phoned, then...'

Also relative clauses headed by universal quantifiers, comparatives,[7] *too*-constructions, etc. cannot license *n*-words in Polish.

3 Long Distance NC

3.1 Locality Restrictions

Subordinate clauses are in general boundaries for Negative Concord, e.g.:

(9) a. *Jan sądzi, że Marysia* ***nikogo*** **(**nie**) lubi.*
John believes that$_{ind}$ Mary nobody not like
'John believes that Mary doesn't like anybody.'

b. * *Jan* ***nie*** *sądzi, żeby Marysia* ***nikogo*** *lubiła.*
John not believes that$_{subj}$ Mary nobody liked

(10) a. *Jan prosił, żeby* ***niczego*** **(**nie**) ruszać w jego pokoju.*
John asked that nothing not touch$_{inf}$ in his room
'John asked not to touch anything in his room.'

b. * *Jan* ***nie*** *prosił, żeby* ***niczego*** *ruszać w jego pokoju.*
John not asked that nothing touch$_{inf}$ in his room

Note that *sądzi* in (9) is a typical 'neg-raising' predicate, that is, matrix negation can be understood as 'raised' subordinate negation:

(11) *Jan* ***nie*** *sądzi, żeby Marysia lubiła Tomka.*
John not believes that$_{subj}$ Mary liked Tom
'John doesn't believe that Mary likes Tom.'
($\approx$ 'John believes that Mary doesn't like Tom.')

Thus, if licensing conditions were a purely semantic matter, (9) would have to be explained. Moreover, it is not (as sometimes assumed) 'tenseness' that blocks NC: both in (9) and in (10) the subordinate clause does not have an independent tense. In (10) it is infinitival, while in (9) it is past participle required by the subjunctive complementizer (cf. Borsley and Rivero (1994)).

On the basis of the examples above we conclude that verbal projections (regardless of semantics or 'tenseness') constitute barriers for NC in Polish.[8]

[7] To be more precise, we should mention that the there is a class of comparatives which does license *n*-words. Accounting for this exception will be the topic of further research.

[8] As noted by an anonymous reviewer, the facts in (9)–(11) are also compatible with another explanation, i.e., that it is the complementizer that blocks NC. However, as discussed in Przepiórkowski and Kupść (1997a, 1997b), this explanation would be more difficult to reconcile with the behaviour of NC is complex predicates.

3.2 NPs and PPs

Note first that although *n*-words *niczyj* 'no one's' and *żaden* 'none' are not direct arguments of the verb, they still imply its negation, cf. (12):

(12) * ***(Nie)*** *chciałem* ***żadnej*** *książki.*
not wanted-I none book
'I didn't want any book.'

Although this behaviour could be attributed to the special status of determiners by assuming a DP analysis of noun phrases or by arguing that they 'agree' with $\bar{N}$ with respect to 'negative polarity', no such explanation can be reasonably put forward to account for examples such as (13) below.

(13) *Moje stopy *(****nie****) tolerują butów z* ***niczego.***
my feet not tolerate shoes from nothing
'My feet can't stand shoes made of anything.'

Moreover, there does not seem to be any constraint on the distance of Negative Concord: in (14a), NC takes place across 6 NP and PP boundaries, while in (14b), it crosses 8 such boundaries.

(14) a. **(****Nie****) lubię smaku konfitur z owoców z* ***niczyjego*** *ogrodu,*
not like-I taste of preserves from fruits from nobody's garden,
oprócz własnego.
apart my own
'I don't like the taste of preserves made of fruit from anybody's garden, apart from (these made of fruit from) my own.'

b. *Gazety z plotkami o żonach władców państw* ***żadnego***
Newspapers with rumours about wives of rulers of countries of none
*kontynentu *(****nie****) są tak interesujące, jak te z plotkami o*
continent not are so interesting as those with rumours about
żonach władców państw afrykańskich.
wives of rulers of countries African
'No newspapers with gossip about wives of rulers of countries of any continent are so interesting, as these containing gossip about wives of rulers of African countries.'

3.3 Summary

Thus, we conclude that Polish Negative Concord is a species of UDCs, although it differs from such well-known UDCs as *wh*-extraction or topicalization in many important respects. First, it is unbounded in the sense that it can work across arbitrarily many NP and PP projections, unlike, e.g., English *wh*-extraction (cf. * *Whose do you like mothers?*). Moreover, subordinate clauses constitute barriers to NC, regardless of whether they are tensed. Additionally, there is no gap whose filler should be found; the dependency is rather introduced lexically by *n*-words.

Finally, unlike the so-called 'strong' UDCs (cf. Pollard and Sag (1994)), there is no overtly realized element corresponding to the dependency.[9]

4 Lexical Approach to UDCs

In what follows, we will build on the lexical approach to unbounded dependency constructions (UDCs) of Sag (1996a, 1996b). The main idea of this approach is that normally words inherit SLASH values of their arguments by simply amalgamating them, i.e., they satisfy the principle of 'Lexical Amalgamation of SLASH':

(15) Lexical Amalgamation of SLASH:

$$\begin{bmatrix} \text{ARG-S} & \langle [\text{SLASH } \boxed{1}], \ldots, [\text{SLASH } \boxed{n}] \rangle \\ \text{SLASH} & \boxed{1} \uplus \ldots \uplus \boxed{n} \end{bmatrix}$$

Moreover, 'SLASH Inheritance Principle' takes care of percolating the value of SLASH from such lexical entries to their maximal projections.[10]

(16) SLASH Inheritance Principle (an approximation):

$$\textit{hd-nexus-ph} \rightarrow \begin{bmatrix} \text{NONLOCAL}|\text{SLASH } \boxed{1} \\ \text{HEAD-DTR}|\text{NONLOCAL}|\text{SLASH } \boxed{1} \end{bmatrix}$$

One advantage of this approach over any purely syntactic treatment of UDCs is that it allows to easily account for the cases in which an unbounded constituent is discharged lexically. The classical example are *easy*-adjectives, e.g.:

(17) *I am easy to please* ___.

In sentences such as (17), the missing object of the lower verb is nowhere to be found; the nominative subject, *I*, cannot be the filler for the missing object, although it is understood as coreferential with it. In the framework sketched above, this can be easily accounted for by positing that *easy*-adjectives are exceptional in that they do not satisfy the principle of Lexical Amalgamation of SLASH, but rather remove one element from the sum of SLASH values of their arguments and coindex it with their subject.[11]

5 The Analysis

There are many reasons for applying Sag's lexical approach to unbounded Negative Concord in Polish. First of all, the 'negation requirement' is introduced lexically

[9] The marker *nie* can hardly be considered one: multiple clausemate *n*-words trigger just one verbal negation (although this could be explained by postulating obligatory haplology of *nie*) and there is another element which can license *n*-words, namely the preposition *bez* (see section 5).

[10] SLASH Inheritance is in work only for certain kinds of phrases, namely *head-nexus-phrases*, in order to exclude items that bind SLASH lexically, cf. Sag (1996a).

[11] Examples such as (17) can be also accounted for assuming the approach to UDCs of Pollard and Sag (1994). However, this approach fails on attributive uses of *easy*-phrases as in (i) below:

(i) *An easy to please man came yesterday.*

See Sag (1996a, 1996b) for details.

(by *n*-words such as *nikt*, *nigdy* and *żaden*). Secondly (and more importantly), 'negation requirement' is discharged lexically, by morphologically negated verbs. Finally, there is an interesting lexical exception to the generalization that prepositions always let the negation requirement percolate higher up: the preposition *bez* 'without' binds negation.

(18) a. *Zaczął bez* ***żadnych*** *wstępów.*
started-he without none introductions
'He started straight away.'

b. *Został bez* ***niczego****.*
stayed-he without nothing
'He was left broke.'

This exception would be awkward to model in the syntax.[12]

In the remainder of this section, we formalize the observations made above.

5.1 Nonlocal Attribute NEGATIVE-CONCORD

In order to account for these facts, we introduce a non-local attribute responsible for Negative Concord, NEG-CONC. Since it does not matter what kind of negative elements initiate the negation, nor does it matter from exactly how many arguments negation percolates, we will assume that the only values of this attribute are '+' and '−'.

(19)
$$\begin{bmatrix} \textit{nonlocal} \\ \textsc{neg-conc}\ \text{boolean} \\ \ldots \end{bmatrix}$$

5.2 Introducing Negation Requirement

The negation requirement is always introduced by negative elements. This is done lexically by positing that such elements have the value of NEG-CONC set to '+' in the lexicon.

(20)
$$\begin{bmatrix} \textit{word} & \\ \textsc{phon} & \langle \text{nikt} \rangle \\ \textsc{synsem} & \begin{bmatrix} \textsc{loc}|\textsc{cat}|\textsc{head} & \begin{bmatrix} \textit{noun} \\ \textsc{case}\ \text{nom} \end{bmatrix} \\ \textsc{nonloc}|\textsc{neg-conc}\ + & \end{bmatrix} \end{bmatrix}$$

5.3 Cancellation

The lexical items which cancel negation percolation have '−' set up in the lexicon as the value of their NEG-CONC, e.g.:[13]

[12] See, e.g., Progovac (1993), which assumes that *without*-headed prepositional phrases project to clauses.

[13] Constraint (21) should be ideally understood as a constraint on the lexicon saying that all verbal lexical entries have to be NEG-CONC−. Alas, this cannot be expressed in pure HPSG, so we model this generalization by leaving the value of NEG-CONC underspecified on lexical entries and positing constraint (21), whose role is to resolve this value to '−'.

(21)
$$\begin{bmatrix} \textit{word} & \\ \textsc{synsem}|\textsc{loc}|\textsc{cat}|\textsc{head} & \begin{bmatrix} \textit{verb} \\ \textsc{neg}\ + \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \textsc{synsem}|\textsc{nonloc}|\textsc{neg-conc}\ - \end{bmatrix}$$

(22)
$$\begin{bmatrix} \textit{word} & \\ \textsc{phon}\ \langle \text{bez} \rangle & \\ \textsc{synsem} & \begin{bmatrix} \textsc{loc}|\textsc{cat}|\textsc{head} & \begin{bmatrix} \textit{prep} \\ \textsc{pform}\ \text{bez} \end{bmatrix} \\ \textsc{nonloc}|\textsc{neg-conc}\ - & \end{bmatrix} \end{bmatrix}$$

Note that this specification correctly models both the cases in which none of the arguments of a cancelling item is an n-word, and those in which there are some n-words among the arguments. In the former case, there is simply no 'negation requirement' to percolate higher up, so the NEG-CONC value should be '$-$'. In the latter case, the 'negation requirement' is cancelled, hence it should not percolate up, so the NEG-CONC value should be again '$-$'.

5.4 Percolation

Following Sag's approach to UDCs (see section 4 above), we assume that 'negation percolation' is happening in two steps. First, the percolating item 'amalgamates' the information on 'negation requirement' from its arguments; then this information is transmitted along the head projection path.

5.4.1 Negation Amalgamation

The lexical items which allow percolation of negation specify the value of their NEG-CONC as '$+$' if at least one of their arguments is NEG-CONC$+$, and as '$-$' otherwise. This is analogous to Sag's Lexical Amalgamation of SLASH.[14]

(23) Lexical Amalgamation of NEG-CONC:[15]

$$\begin{bmatrix} \textit{word} & \\ \textsc{synsem}|\textsc{loc}|\textsc{cat} & \begin{bmatrix} \textsc{head}\ \text{noun} \vee \text{prep} \\ \textsc{arg-s}\ \boxed{1}\text{list(synsem)} \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \textsc{synsem}|\textsc{nonloc}|\textsc{neg-conc}\ \boxed{2} \end{bmatrix} \wedge \text{sum\_neg}(\boxed{1},\boxed{2})$$

In the constraint above, sum_neg/2 denotes the relation which holds between a list and a boolean value only if either there is an $\begin{bmatrix} \textsc{nonloc}|\textsc{neg-conc}\ + \end{bmatrix}$ element in the list and the boolean value is '$+$', or if there is no such element and the boolean value is '$-$':

[14] We assume that all dependents, including modifiers, are on ARG-S of a verb, compare Miller (1992), van Noord and Bouma (1994), Manning, Sag, and Iida (1997) and Przepiórkowski (1997b, 1997a).

[15] Again, this constraint is somewhat sloppy. It should be understood as a default constraint on nominal and prepositional lexical entries (or, otherwise, particular lexical entries would have to be idiosyncratically marked as amalgamating items); it can be overridden by n-words (e.g., (20)) and the preposition *bez* (22). This could be formalized via mechanisms of the kind postulated by Sag and Miller (1997) and Abeillé, Godard, and Sag (1997) (defaults and hierarchical lexicon). Unfortunately, we are not aware of explicit formalizations of these mechanisms within HPSG.

$$\text{sum\_neg}(\langle\rangle, -).$$
$$\text{sum\_neg}(\langle \begin{bmatrix}\textsc{nonloc|neg-conc}\ +\end{bmatrix} \rangle \oplus \text{list}, +).$$
$$\text{sum\_neg}(\langle \neg \begin{bmatrix}\textsc{nonloc|neg-conc}\ +\end{bmatrix} \rangle \oplus \boxed{1}, \boxed{2})\ :-$$
$$\quad \text{sum\_neg}(\boxed{1}, \boxed{2}).$$

5.4.2 Negation Inheritance Constraint

The second step ensures percolation of the NEG-CONC value along the head projection from a lexical item to its maximal projection. This is done with the help of Negation Inheritance Constraint (NIC), a constraint analogous to the SLASH Inheritance Principle (cf. (16) above).

(24) Negation Inheritance Constraint (NIC):

$$\begin{bmatrix} \textit{phrase} \\ \textsc{dtrs}\ \text{headed-struc} \end{bmatrix} \rightarrow \begin{bmatrix} \textsc{synsem|nonlocal|neg-conc}\ \boxed{1} \\ \textsc{dtrs|head-dtr|synsem|nonlocal|neg-conc}\ \boxed{1} \end{bmatrix}$$

Note that, unlike in (16), there is no need to exclude phrases overtly realizing a missing constituent from the Negation Inheritance Constraint (because there is no missing constituent in this UDC), so (24) is a constraint on all headed phrases.

5.5 Islands

Islands for NC (non-negated verbs) can be characterized by two features: they do not allow any arguments to introduce the 'negation requirement'; and they themselves do not introduce the 'negation requirement'. In terms of the analysis above, this means that lexical entries which create islands for NC require that all their arguments be NEG-CONC− and that they are NEG-CONC− themselves. The second condition amounts to saying that island-creating items belong to the class of 'cancelling items'. Interestingly, the first condition then amounts to saying that these items also have to belong to the class of 'percolating items'. (That is because under the assumption that they are NEG-CONC− and that the value of NEG-CONC can be only either '+' or '−', the statements "all their arguments are NEG-CONC−" and "some of their arguments can be NEG-CONC+ only if they are NEG-CONC+" (which they are not!) are logically equivalent.)

Thus, in order to account for islands for NC, all there is to do is to include island-creating items (non-negated verbs) in the antecedents of constraints (21) and (23):[16]

(21′)

$$\begin{bmatrix} \textit{word} \\ \textsc{synsem|loc|cat|head}\ \text{verb} \end{bmatrix} \rightarrow \begin{bmatrix} \textsc{synsem|nonloc|neg-conc}\ - \end{bmatrix}$$

(23′) Lexical Amalgamation of NEG-CONC:

$$\begin{bmatrix} \textit{word} \\ \textsc{synsem|l|cat} \begin{bmatrix} \textsc{head}\ \text{noun} \vee \begin{bmatrix} \textit{prep} \\ \textsc{pform}\ \neg\text{bez} \end{bmatrix} \vee \begin{bmatrix} \textit{verb} \\ \textsc{neg}\ - \end{bmatrix} \\ \textsc{arg-s}\ \boxed{1}\text{list(synsem)} \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \textsc{synsem|nonloc|neg-conc}\ \boxed{2} \end{bmatrix} \wedge \text{sum\_neg}(\boxed{1},\boxed{2})$$

[16] See footnotes 13 and 15.

5.6 An Example

Lexical entries such as (20) and (22), together with constraints (21′), (23′) and (24) correctly account for the negation data in (1)–(10), (12)–(14) and (18). We will further illustrate this analysis with example (25).

(25) *Janek* ***nigdy*** **(**nie**) czytał* ***żadnych*** *książek.*
John never not read none books
'John has never read any books.'

- There are three dependents of the verb: the subject *Janek*, the adverbial modifier *nigdy*, and the object *żadnych książek*;
- the object's head is the word *książek*, its only dependent is the negative element *żadnych*, which is NEG-CONC+, so *książek*, according to (23′), is also NEG-CONC+;
- through NIC (cf. (24)), NEG-CONC+ percolates to the maximal projection of *książek*, i.e., the phrase *żadnych książek* is NEG-CONC+;
- *nigdy* is specified in the lexicon as NEG-CONC+;
- the subject's head is *Janek*, it is a noun with no dependents, so, according to (23′), it is NEG-CONC−;
- according to NIC, NEG-CONC− percolates to the maximal projection of *Janek*;
- let us first consider ungrammatical (25) with no overt negation on the verb: *czytał* is a non-negated verb, so:
  - (21′) applies, hence *czytał* is NEG-CONC−;
  - (23′) applies, some of the dependents of the verb are NEG-CONC+, so the verb is also NEG-CONC+;
  - a contradiction, so the sentence with non-negated verb is ungrammatical;
- On the other hand, (25) with negation is correct: *nie czytał* is a negated verb, so:
  - (21′) applies, so *nie czytał* is NEG-CONC−;
  - (23′) does not apply, so no contradiction ensues;
  - NIC applies, NEG-CONC− is projected to the top of the clause;
  - as a result, we get a NEG-CONC− sentence, i.e., a sentence with no undischarged 'negation requirement.'

6 A Purely Semantic Account?

It has been often proposed that NC is an essentially semantic phenomenon (e.g., van der Wouden and Zwarts (1993), Progovac (1993), Acquaviva (1995)). We are sympathetic with the view that at least partially semantic solution should be sought (e.g., to explain the fact that the preposition *without* licenses NC in many languages). However, the analysis of Polish NC has to be to a large extent syntactic in view of the arguments presented below.

Neg-Raising 'Neg-raising' (scope of negation) does not license *n*-words in Polish (unlike in some other languages). As (26a) (=(11)) shows, negating the matrix verb *sądzi* 'believes' may have the 'neg-raising' effect. However, as shown in (26b) (=(9b)), this does not suffice to license the downstairs *n*-word.

(26) a. *Jan **nie** sądzi, żeby Marysia lubiła Tomka.*
John not believes that$_{subj}$ Mary like$_{pst\text{-}part}$ Tom
'John believes that Mary doesn't like Tom.' (possible reading)

b. * *Jan **nie** sądzi, żeby Marysia **nikogo** lubiła.*
John not believes that$_{subj}$ Mary nobody like$_{pst\text{-}part}$
'John believes that Mary doesn't like anybody.' (putatively)

Verb Clusters As discussed in (Przepiórkowski and Kupść 1997b), an *n*-word dependent of the lowest verb in a verb cluster triggers *nie* on any of the verbs in the cluster:

(27) *Janek *(**nie**) chce pójść do **żadnego** kina.*
John not wants go$_{inf}$ to none cinema
'John doesn't want to go to any cinema.'

On the other hand, the presence of an intervening complementizer disallows this:

(28) * *Janek **nie** chce, żeby pójść do **żadnego** kina.*
John not wants that$_{subj}$ go$_{inf}$ to none cinema
'John doesn't want one to go to any cinema.' (putatively)

It is difficult to see what semantic factors could explain this contrast.

Gerunds As mentioned in (Przepiórkowski and Kupść 1997a), gerunds behave in a different way than verbs do, i.e., they optionally let the negation requirement percolate higher up:

(29) a. ? *Napisanie poprawnie **żadnego** dyktanda *(**nie**) pomoże mu w wygraniu konkursu.*
writing correctly$_{adv}$ no dictation not will help him in winning competition

'Completing correctly no dictation exercise will help him to win the competition.'

b. *Poprawne napisanie* ***żadnego*** *dyktanda *(****nie****) pomoże mu w wygraniu*
correct$_{adj}$ writing no dictation not will help him in winning
konkursu.
competition
'Correct completion of no dictation exercise will help him to win the competition.'

Although for some speakers there is a slight difference in grammaticality between verbal gerunds (whose CONTENT is argued by (Malouf 1996) to be the same as that of corresponding verbs) and nominal gerunds, cf. (29a) vs. (29b), a much stronger contrast is to be expected if NC is a purely semantic phenomenon.

Cross-linguistic Variation There is a good deal of cross-linguistic variation in NC (cf., e.g., the works on Romance and Germanic cited in this paper) which, as far as we can see, cannot be explained on purely semantic grounds.

7 Conclusions

The main aims of this paper were to show that Negative Concord in Polish is a species of Unbounded Dependency Constructions and to provide a formal analysis of this phenomenon. Our analysis is hosted in HPSG, more specifically, it utilizes the lexical approach to UDCs of Sag (1996a, 1996b). This way we were able to account for a kind of unbounded dependency without missing constituents.

It should be noted that the idea that NC is in some sense an unbounded dependency is not unique to our proposal (although the set of data supporting this conclusion is). In much of GB-based work on NC in various languages, various island constraints similar to those of other kinds of UDCs were noted, cf., e.g., Rizzi (1982), Bayer (1990), Zanuttini (1991), Haegeman and Zanuttini (1996), Progovac (1993).[17] However, since there is no overt movement in NC, the only way to deal with those observations was to assume movement at Logical Form. In HPSG, on the other hand, although only a single level of representation is available, various kinds of UDCs can be accounted for with the help of the same mechanism, namely amalgamation and inheritance of non-local features. However, since different non-local features are involved in NC and, say, *wh*-extraction, any differences between these two kinds of UDCs can be easily parameterized.

To put our results in the broader perspective, it is useful to compare them to the approach advocated by Progovac (1988, 1993, 1994). On her account, NC is a close relative to binding insofar that negative polarity items have to be locally bound by a negative operator (e.g., sentential negation marker) while positive polarity items have to be locally free. Contrary to appearances, we consider our 'unbounded' approach to NC compatible with Progovac's 'binding' approach to negative polarity. For example, it is striking that in Polish anaphora binding seems to be unbounded

[17] See also (Recourcé 1995) for an HPSG analysis of French NC as a kind of UDC.

in the same way as NC, i.e., it can cross NP and PP projections (even if an accessible subject of an NP is available), compare (14a) above with (30) below:

(30) *Janek lubi smak konfitur z owoców tylko ze swojego ogrodu.*
John likes taste of preserves from fruits only from ANA POSS garden
'John likes the taste of preserves made of fruit only from his own garden.'

These similarities between NC and binding certainly deserve further research.

References

Abeillé, A., D. Godard, and I. A. Sag (1997). Two kinds of composition in French complex predicates. Version of June 29, 1997. To appear in Erhard Hinrichs, Andreas Kathol, and Tsuneko Nakazawa, eds., *Complex Predicates in Nonderivational Syntax*. New York: Academic Press.

Acquaviva, P. (1995). The logical form of negative concord. In *Résumés des Communications du Colloque de Syntaxe et Sémantique de Paris*. Université Paris 7.

Aranovich, R. (1993). Negative concord in Spanish and *in-situ* licensing. In E. Duncan, D. Farkas, and P. Spaelti (Eds.), *Proceedings of Twelfth West Coast Conference on Formal Linguistics*.

Bayer, J. (1990). What Bavarian negative concord reveals about the syntactic structure of German. In J. Mascaro and M. Nespor (Eds.), *Grammar in Progress*, pp. 13–24. Dordrecht: Foris Publications.

Bolc, L., K. Czuba, A. Kupść, M. Marciniak, A. Mykowiecka, and A. Przepiórkowski (1996). A survey of systems for implementing HPSG grammars. Technical Report 814, Institute of Computer Science, Polish Academy of Sciences, Warsaw, Poland.

Borsley, R. D. and M. L. Rivero (1994). Clitic auxiliaries and incorporation in Polish. *Natural Language and Linguistic Theory 12*, 373–422.

den Besten, H. (1986). Double negation and the genesis of Afrikaans. In P. Muysken and N. Smith (Eds.), *Substrata versus Universals in Creole Languages. Papers from the Amsterdam Creole Workshop*, Amsterdam/Philadelphia, pp. 185–230. Benjamins.

Dowty, D. (1994). The role of negative polarity and concord marking in natural language reasoning. In *Proceedings of the Fourth Conference on Semantics and Linguistic Theory*.

Haegeman, L. and R. Zanuttini (1996). Negative concord in West Flemish. In A. Belletti and L. Rizzi (Eds.), *Parameters and Functional Heads*, Oxford Studies in Comparative Syntax, Chapter 4, pp. 117–179. New York: Oxford University Press.

Kupść, A. and A. Przepiórkowski (1997, January). Verbal negation in Polish: Syntax or morphology? Unpublished manuscript.

Labov, W. (1972). Negative attraction and negative concord in English grammar. *Language 48*, 773–818.

Ladusaw, W. A. (1979). *Polarity sensitivity as inherent scope relations.* PhD dissertation, University of Texas at Austin, Austin, Texas.

Laka, I. (1990). *Negation in Syntax: On the Nature of Functional Categories and Projections.* PhD dissertation, MIT, Cambridge, Mass.

Malouf, R. (1996). Mixed categories in hpsg. Paper presented at Third International Conference on HPSG, Marseille.

Manning, C. D., I. A. Sag, and M. Iida (1997, March). The lexical integrity of Japanese causatives. To appear in G. Green and R. Levine (eds.), *Readings in HPSG*, Cambridge University Press. Version of March 5, 1997.

Miller, P. (1992). *Clitics and Constituents in Phrase Structure Grammar.* New York: Garland.

Pollard, C. and I. A. Sag (1994). *Head-driven Phrase Structure Grammar.* Chicago University Press.

Progovac, L. (1988). *A Binding Approach to Polarity Sensitivity.* PhD dissertation, University of Southern California, Los Angeles.

Progovac, L. (1993). Negative polarity: Entailment and binding. *Linguistics and Philosophy 16*, 149–180.

Progovac, L. (1994). *Negative and Positive Polarity.* Cambridge: Cambridge University Press.

Przepiórkowski, A. (1997a). On case assignment and "adjuncts as complements". Unpublished manuscript. To be submitted to the HPSG volume in "Studies in Constraint-Based Lexicalism".

Przepiórkowski, A. (1997b). Quantifiers, adjuncts as complements, and scope ambiguities. Draft of July 3, 1997.

Przepiórkowski, A. and A. Kupść (1997a). Negative concord in Polish. Technical Report 828, Institute of Computer Science, Polish Academy of Sciences.

Przepiórkowski, A. and A. Kupść (1997b). Verbal negation and complex predicate formation in Polish. In *Proceedings of the 1997 Conference of the Texas Linguistics Society on the Syntax and Semantics of Predication*, Austin. To appear.

Recourcé, G. (1995, March). *L'association négative en français. Etude linguistique et formelle de la particule ne.* Ph. D. thesis, Université Paris 7, UFRL.

Rizzi, L. (1982). *Issues in Italian Syntax*, Chapter IV: Negation, *Wh*-movement and the null subject parameter, pp. 117–184. Dordrecht: Foris Publications.

Sag, I. A. (1996a). English relative clause constructions. To appear in *Journal of Linguistics*.

Sag, I. A. (1996b). Head-driven extraction. In progress. Version of April 16, 1996.

Sag, I. A. and P. H. Miller (1997). French clitic movement without clitics or movement. To appear in *Natural Language and Linguistic Theory.*

van der Wouden, T. and F. Zwarts (1993). A semantic analysis of negative concord. In U. Lahiri and A. Wyner (Eds.), *Proceedings of the Third Conference on Semantics and Linguistic Theory*, Ithaca. Cornell University, Linguistics Department.

van Noord, G. and G. Bouma (1994). Adjuncts and the processing of lexical rules. In *Fifteenth International Conference on Computational Linguistics (COLING '94)*, Kyoto, Japan.

Zanuttini, R. (1991). *Syntactic Properties of Sentential Negation. A Comparative Study of Romance Languages.* PhD dissertation, University of Pennsylvania.

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